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THE HUMAN SIDE OF BIRDS NEW YORK
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HERE is a sympathetic, colorful book which will help you to understand the spirit, emotions and impulses in the lives of our feathered friends of the air. It is not a bird guide or a tome devoted to the scientific aspects of birds, but a simple, factual story of the friendly creatures and what they do and feel.

There is scarcely a quality or occupation in the human world which does not have its parallel in the bird world. They fill all the professions and occupations from aviators to street-cleaners. Woodpeckers are store-keepers, wrynecks are bakers, eagles are policemen, turkeys are road-makers, owls are judges, etc., etc. Birds raise their own food, have their own theaters and orchestras, maintain labor unions and military organizations. They have a distinct social life all their own. In size and appearance and behavior, they are more varied than humans ever have been or in all probability ever will be.

THE HUMAN SIDE OF BIRDS shows that our friendly, feathered neighbors do many things that man does and that for thousands of years birds have been doing things which it is doubtful men will ever do. By stories told from personal observation, by facts gathered with loving care by famous ornithologists, by illustrations both in color and black and white, Royal Dixon opens before your eyes the fascinating, human side of birds.

The Mother Owl often sits with her young on the branch of a tree and "talks" to them as if she were teaching them some of her own wisdom.

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THE HUMAN SIDE OF BIRDS

by Royal Dixon

WITH FOUR ILLUSTRATIONS IN COLOR BY S. H. WAINWRIGHT, JR.
AND WITH THIRTY-TWO ILLUSTRATIONS FROM PHOTOGRAPHS

HALCYON HOUSE

NEW YORK

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TO

CORNELIA GAFFNEY

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NOTE

The author wishes to express his sincere indebtedness and gratitude to Mr. Franklyn Everett Fitch and Mr. Henry Clay Foster for their valuable and scholarly assistance in the final preparation of this book.

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FOREWORD

"I wish I did his power possess
That I might learn, fleet bird, from thee,
What our vain systems only guess,
And know from what wild wilderness
You came across the sea."

In the examination of some aspects and forms of life it is often best to cast aside the complex machinery of cold and calculating analysis, and to look only with the eye of love and sympathy. In this work it is my purpose to reject the limitations of unsympathetic research, and to endeavour to see beyond formal classifications, and to understand the spirit, emotions and impulses in the lives of our feathered friends of the air.

By this means many new discoveries have been made which include a universal truth, where a too minute and laborious logic would have proved a hopeless labyrinth. The syllogistic method signally fails to comprehend or appreciate the real spiritual beauty of the life of other species than our own. It ascribes no intelligence or spirituality even to birds, and brands their most efficient activities as "instinctive."

In THE HUMAN SIDE OF PLANTS and THE HUMAN SIDE OF TREES, it was shown that our plant and vegetable friends not only have habits and attributes that in many respects place them in the category with man himself, but that they possess faculties and powers which man can never hope to attain. In the present volume it is proposed to prove that our bird neighbours not only do practically everything that man does, but have been doing things for thousands of years which it is doubtful that he will ever do. And their unerring judgment and knowledge of the mysterious and trackless spaces of the air are still to man an unsolved marvel!

When, after being raised in a coop, and released after a journey of three thousand miles in a closed box, carrier-pigeons return to their starting-point with unerring exactness, only a limited mind can accept the explanation of "instinct" as adequate. When a robin confined in a cage for seven years, upon being set free flies fifteen miles to its former home, one *must* recognise powers of marvellous memory and intelligence, and even a power that man does not comprehend, in the bird world. When flocks of wild birds flee several days in advance of a great storm, and ocean birds come inland for the same reason, wonderful psychic understanding is

surely indicated, and the stolid dogmatism of the old stand-patter ornithologists appears more inexcusable.

It is a most arrogant attitude that man assumes when he endeavours to explain everything in terms of his own life and mind. What he does not himself possess or understand about his fellow creatures he glosses over with such terms as "instinct" or "evolutionary process." This persistent effort to reason everything out in preconceived terms places tremendous limitations upon the human understanding. We should maintain a thoroughly open mind and approach Nature with the wonder of a child. Profound in meaning was the speech of the priest of Sais to the Greek Herodotus: "You shall be children ever."

It should be remembered that birds have a life, a point of view, and a destiny of their own, and that our failure to comprehend them in no way justifies us in concluding that they are in every sense below us in the scale of existence. That they are inferior in many ways we have a right to believe, but we should be eager to recognise the qualities in which they excel. Who has not seen a look of majesty and superiority in the eyes of an owl or of an eagle and not felt a vague sense of awe and self-effacement?

If we approach the bird with the right attitude of mind, a wonderful experience awaits us. John Burroughs, the great American naturalist, says: "If I name every bird in my walk, describe its colour and ways, . . . give a lot of facts and details about the bird, it is doubtful if my reader is interested. But if I relate the bird in some way to human life, to my own life; show what it is to me and what it is in the landscape and season, then do I give my reader a live bird and not a labelled specimen."

This is the secret of all worth-while nature study. We must look upon a bird as we do upon a man—not merely to learn the Latin names of bones and muscles, but to study its disposition, character, emotions, and thought processes. In other words, we must treat a bird as a friend and not as a scientific specimen.

There is no quality or occupation in the human world which does not have a parallel in the bird world. They fill all professions from fishermen to street-cleaners. Woodpeckers are store-keepers; yellow-hammers are owners of wine-cellars; wrynecks are bakers of ant-cakes. Other birds raise their own insects for provisions. Birds maintain labour unions and military organisations. Their best divers go to depths of four hundred feet, swal-

lowing pebbles to make themselves heavy for the purpose.

In physical shape, form and colour, the feathered folk have no such narrow limitations as has man. The largest was the elephant-bird (now extinct) which was five times the size of the African ostrich; the smallest is a tiny purple humming-bird no larger than a little brown bee. Birds inhabit all places: mountains, oceans, the ground, the trees, caves, the Arctic regions, the tropics, the air. In each place, they have worked out a marvellously well-ordered existence. The Arctic goose has even developed a special sac in which she can hatch her eggs in the extreme cold of her home.

The birds have a distinct social life. They build the most artistic and best equipped homes of all non-human beings. They entertain extensively and have many convivial gatherings. Their family life is exceptionally moral, though there are a few polygamists among them. Divorce is rare, but suicide is often the natural outcome of deep disgrace.

There are birds of as many shades of character and disposition as there are types of people. There are the gay, the sad; the sociable, the reserved; the trustful, the shy; the frank, the deceitful; the honest, the dishonest; the gentle, the violent; the peace-

ful, the quarrelsome; and so on. However, it should be emphasised that the prevailing note of birddom is one of happiness and good cheer. As a rule only sick birds, a few nocturnal birds, and carrion birds are mopish.

From the point of view of appearance and characteristics every bird has a counterpart in the animal kingdom. It requires little imagination to see in the bateleur eagle a feathered lion; in the night-prowling owl a cat; in the cunning hawk a fox; in the scavenger vulture a hyena; in the raven a mischievous dog; in the imitating parrot a monkey; in the ostrich, the "feathered beast of burden," a camel; in the blood-thirsty butcher-bird a weasel; in the gnawing crossbill a squirrel; in the house-wren a mouse; in the cassawary a llama; in the duck the duck-mole (duck-billed platypus); in the bustard a stag; in the croaking bittern of the marshes a bull-frog; in the tooth-billed falcon an alligator; in the elephant-bird an elephant; in the meat-bird a panther; in the oyster-catcher a raccoon; in the scale-bird an armadillo; and even in the jackass-penguin a jackass!

The nomenclature of birds is all-embracing, and ranges from the skunk-bird to the bird-of-the-Holy-Ghost, from the dove of the Ark to the raven that fed Elijah. The ibis was once worshipped in

Egypt; even to-day there are sacred birds in many parts of the world.

Birds are naturally very friendly to man. With the exception of certain peculiar species, they begin to fear him only when they know him. When he appears among the feathered denizens of uninhabited regions, they look at him with astonishment but not with fear. Auks and penguins of the Antarctic could once be caught with the hand. There are numerous instances of wild birds seeking human protection when pursued by some relentless foe. Sometimes they fly into houses for shelter; partridges have been known to throw themselves at the feet of woodsmen when hard pressed by a hawk.

On man's behalf it must be said that he often reciprocates this affection. He most often gives animals friendship because of services which they render him, but he gives birds his affection because of his love for their companionship, quite as much as for their charm and beauty. He likes to have them about him; he delights in their songs and the exquisite colourings of their plumage.

In fact, too often he grows unduly fond of this plumage, and his wife covets the beautiful feathers for her own decoration. Then it is that soulless men go out and slaughter the unoffending songsters by the thousands for their feathers, that they may

sell them! Many more thousands are killed for their flesh, and often men murder them only for the mere gratification of a low passion for destruction of life. Thus species after species, the world over, has been exterminated, and in many countries only the most rigorous game laws prevent wholesale annihilation.

How short-sighted is man! Even if he cannot realise that he is killing a fellow creature in feathers, a being which has joys, hopes, ambitions, and a well-filled life—one that is quite as necessary to the world's economy as his slayer—he ought easily to see that he is forcing to extinction an agency which is a conserver of civilisation itself. As Michelet truly says: "Barbarous is the science, the hard pride, which disparages to such an extent animated nature, and raises so impassable a barrier between man and his inferior brothers!"

To-day every one is awakened to the necessity of forest preservation. The day that our woodlands fall below a certain minimum area, that day our decadence will begin. The day that our birds are slaughtered to a certain point, that day the forests are doomed. The birds perform invaluable services in keeping down the numbers of destructive insects, which, if allowed full sweep, would speedily destroy all trees. Of the vast sums of money now

being poured into forest reserves some of the millions should be expended on behalf of our feathered friends.

It is to be hoped that the reader will enter the following pages with a sympathetic appreciation of the kinship of man and bird—fellow-mortals that face the same problems and difficulties, and solve them by methods strikingly similar. In fact, we cannot but feel a certain reverence for the lore of bird life when we reflect that man can conceive of no higher state than one in which he himself is equipped with a pair of wings.

ROYAL DIXON.

New York,
May, 1917.

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THE HUMAN SIDE OF BIRDS

THE HUMAN SIDE OF BIRDS

CHAPTER I

FEATHERED ARTISTS

It wins my admiration
To view the structure of that little work,
A bird nest. Mark it well, within, without;
No tool had he that wrought, no knife to cut,
No nail to fix, no bodkin to insert,
No glue to join; his little beak was all,
And yet, how neatly finished! What nice hand,
With every implement and means of art,
And twenty years' apprenticeship to boot,
Could make me such another? Fondly then
We boast of excellence, whose noblest skill
Instinctive genius foils.

—Hurdis "The Linnet."

PERHAPS in no better way do our little brothers of the air show that they possess considerable knowledge of the arts, and that they are continually improving that knowledge, than by the marvellous homes and miniature palaces they create and decorate for themselves. Birds learn by

experience and observation just the same as mankind. And the more experience a bird has the greater its fund of knowledge.

In the arts they are indeed our brothers; sometimes our best teachers. No better pattern of art can be found than the nest of the long-tailed tit; unless it is that of his fellow-workman and imitator, the chaffinch. His sense of beauty and proportion bespeaks ages of art culture. The nest is often placed among the tiny grey boughs of the rhododendron, just beneath two glorious bunches of crimson blossoms in such a manner that one must believe it was made for display as well as for comfort. Surely it was never meant to be concealed!

Few artists of the bird-world fail to carry out a colour scheme. Exceptions are to be found among the ground birds, which lay eggs practically invisible. Nature is very kind and wise, and only those eggs are colourless which are laid in hollows and caves where no one can see them. We find colourless eggs among the woodpeckers, owls, and wrynecks. One might walk over the plover's or sandpiper's nest in the sand without seeing it. But among the bluejays, sparrows, finches, bluebirds, and numerous others, delicate colourings are literally lavished on the eggs, often in definite patterns. Surely the birds enjoy nature's art! John Clare

wonderfully describes the eggs of the yellow-hammer in the following lines:

> "Five eggs, pen-scribbled o'er with ink their shells,
> Resembling writing-scrolls, which Fancy reads
> As nature's poesy and pastoral spells—
> They are the yellow-hammer's, and she dwells,
> Most poet-like, 'mid brooks and flowery weeds."

We judge an architect by the buildings he rears; and so we must judge the consciousness of beauty and art on the part of the birds by the manner in which they build their nests, decorate their homes, and sometimes themselves.

This is especially true as to the gardener-bird, the baya of India, the bower-bird, the collar-bird, and a number of other artists whose highly developed esthetic qualities are demonstrated in their efforts to produce art, and to decorate their homes in accordance with the best principles of form and colour. The motmot even goes so far as to disfigure its feathers in the attempt to improve the shape of its tail, while the gardener-bird and the hammerhead have little places near their homes that might be termed their art shops. Here they store gaily-coloured shells, gaudy pebbles, dried flowers, rich feathers, and various small bits of broken wood and pieces of red clay.

Among the cleverest of the artists is the diock, of the weaver family. His home is in Africa, and he is an expert in the weaving of colour into the patterns of his nest. The finished house is a thing of great charm: soft and tinted mosses are twined together with almost cameo precision; red, brown, and dark green grasses are fashioned into the side of the nest like attached draperies.

The diock is very sociable. While he never indulges in afternoon tea, he does enjoy a sociable drink at the nearest spring, where he can talk over with his friends all the gossip of birdland. But some of the older and wiser feathered artists must always remain on the lookout for enemies during these parties. The hordes of tiny singers go very near to the water's edge and arrange themselves comfortably among the branches of the trees. One by one they dive down to drink the cool water below while the others sing. But during this time several wise heads are higher up among the tree branches watching for hawks.

The Baltimore oriole is famous as a decorative artist. The materials he uses are collected from fields, gardens, and even yards: he is by no means shy about approaching a window where he sees yarn and bits of gaily coloured thread. The brighter the colours, the better for his work.

Once having selected a place for his home, he sets to work to collect the material. And when the task is completed, everything—from Mr. and Mrs. Oriole to the swinging, aerial nest—harmonises perfectly. How picturesque to see this little palace swinging in the air filled with four tiny babies!

No class of artists excels the humming-birds. Their nests are wonders of beauty, delicacy, and architecture. A friend of mine, Miss Warner, has one of these treasures which she values very highly. It is a nest of the ruby-throated humming-bird, and is snugly built upon a tiny grey apple bough. The material used is the most delicate plant down and dried flower petals held together with silvery spider's web. The outside is exquisitely decorated with greyish-white lichens, while the inside is like a silver-lined baby's thimble. It resembles nothing so much as a small thimble-like knot on an apple bough. What an art palace for the little birds!

Humming-birds are artists not only in the making of their homes, but in their care of dress as well. The puff-legs wear the daintiest muffs of cottony down, of white, black, buff, or brown, according to the species. The glowing puff-leg is the most beautiful. Its tail feathers are so dazzling in their beauty and wonder, that it has never been excelled, if ever equalled, by bird, flower, or

butterfly. The distinguished ornithologist, John Gould, in his *Monograph of the Trochilidæ,* says: "Every one who, for the first time, finds himself in front of the compartment of my collection in which this species is placed, gives utterance to some exclamation expressive of the admiration excited by its striking beauty and the glowworm-like splendour of its upper tail-coverts. This brilliancy is more apparent at certain hours of the day; for instance, it is more beautiful in the evening after sunset than at midday, the brilliancy being relieved by the dark hue of the tail-feathers. It is unquestionably one of the finest species of the genus, and one of the most resplendent of the Trochilidæ; would that it were possible for me even faintly to depict it!"

The Syrian nuthatch builds a nest of red and brown clay, and the outside is covered over with the iridescent gossamer wings of numerous beetles and other insects. The dwarf swift of Africa decorates her front yard—a part of the thick palm leaf on which her nest is built—by gluing her tiny babies onto the leaf. Here the baby jewels sparkle like living diamonds as the breezes swing them to and fro in the air. Their mother's jewels indeed!

The baya bird, another of the weaver family, builds a veritable fairy palace, which is illuminated

with tiny living lamps. There is a living-room below, and above are two other rooms: one a nursery, the other a rest-room for poor Mr. Baya, whose family cares are most fatiguing. This interesting bottle-shaped house is built of strips of grass skilfully woven together. It is as compact as a sofa-cushion, with a long rope-like neck which is tied to a limb in the most ingenious manner. The entrance and exit to Mr. Baya's house are two holes at the bottom of the entire structure.

These strange artists delight in building their nests in groups of from twenty to fifty, swinging like so many graceful fruits from the eaves of human habitations. With their precious little treasures they sway to and fro in the wind like swinging cradles.

The Baya family are really human in their sense of luxury; and their tastes do not stop in producing a house of mere architectural elegance, but incorporate as well features of decorative and practical value. For as soon as Mrs. Baya has the inside of her bed-chamber arranged, Father Baya goes away to find fresh red clay for the decoration of the walls. Soon the inner ones are covered with this clay, and often before it has time to dry and harden he has captured a number of fireflies; these not only make very good food for Mrs. Baya but, adhering to the

clay walls, they light the chamber beautifully with a phosphorescent glow, so that the house looks like a fairy palace in the dark.

In the building of dainty, wildwood bungalows, a species of warbler, called the tailor-bird, displays a remarkable esthetic taste. With astonishing skill he sews together with plant fibre the edges of a broad leaf, or of two leaves, forming a dainty little deep cup of living green. In it is built a luxurious nest of tan grasses of fine texture, lined with thistle down and dried flower petals. A cradle indeed fit for the gods!

A landscape artist of world fame is the gardener-bird. He does not care so much about his nest, but his yard is where his artistic genius finds highest expression. He is a naturalist, an architect, and a landscape artist combined!

The manner in which he beautifies his garden is most extraordinary. The noted naturalist, De Bessari, claims that this bird-artist seeks a level spot on which grows a bush or shrub about the thickness of a walking-cane. "This is made the central pillar of the edifice, and serves, at about two feet from the ground, to fasten the framework of the roof to. It is held in place by an embankment of moss built up around the root. After the framework is formed, other stems are woven in and out

until a water-proof roof is made. Then a gallery is constructed, running around the interior of the edifice. When completed the whole structure is three feet or more in diameter at the base, is tent-shaped, and has a large arched opening for a doorway.

"Around the house are artistically arranged grounds, made green and lawn-like by being covered with patches of moss brought hither for the purpose. Bright-coloured flowers and fruits and fungi are disposed about the premises; and even brilliant-hued insects are captured and placed here and there on the grounds to add to their attractiveness. The inner gallery of the house is also decorated with these bright objects, which are removed and replaced as they fade. Moreover, and with evident design, the material of which the house is built is a species of orchid, which retains its freshness for a very long time."

These interesting artist homes are made as places for social gatherings to talk over the affairs of bird-land, and also for rest and recreation. The bird has a real joy in restful places and attractive scenery; and the genuine bird-artist can beautify the ugliest spot quite as well as his big brother, man.

The Acadian flycatcher really belongs to the impressionistic school of art. It is quite evident

that these birds try to see how very odd they can be. They are common in eastern Pennsylvania during the breeding season, and their strange homes are the wonder of those who find them. These nests are built with dry blossoms of the hickory tree, and also of long strips of the inner bark of different trees. They are sometimes modelled into a compactly built, cup-like cavity, from which hangs a gradually tapering mass so shaped and trimmed with small twigs as to appear like coiled moss, wound by the wind. This interesting tassel of ornament is from seven to nine inches in length.

The long-billed marsh wren delights in spherical nests. In early May, Mr. and Mrs. Wren seek a suitable, low bush, and here amid the brackish marshes of the seashore, away from the haunts of man, they weave out of dry grasses the most exquisite little nest, just out of reach of the tides. Its form is globular, and it is artistically seamed with brown, yellow, and grey cottony down. A delicate curtain of reddish brown surrounds the entrance; and inside the nest is a downy lining which the most fastidious decorator might envy.

Man could never make with all the appliances at his command a thing so graceful, so fairy-like, as the delicate lace hammock of the Parula warbler. It is often seen swinging over a stream from the

branch of a hemlock or spruce tree. It is like a delicate jewel suspended on a spider's web; and the artists have selected the most suitable colours from the greyish green mosses out of which to make it. These miniature birds have slate-blue backs and orange-yellow breasts, and these colours quite harmonise with the colours of their eyrie and jewel-like nests. Mr. Warbler redecorates the house anew every day, and it is not uncommon to see petals of the yellow daffodils gracefully stuck into the walls. He is an artist even in his attention to his devoted mate!

The red-winged blackbird builds a most unusual nest in the form of an inverted cone. These charming artists of the swamp-lands fill the air with loud, clear, resonant notes. And while their homes are at times somewhat bulky in appearance, yet they are most often so symmetrically and compactly woven into the cat-tails that they are beautifully artistic in appearance. The outer covering is made of grasses and rushes, while within is a delicate lining of thistle from hawkweed, dandelion, and other soft materials.

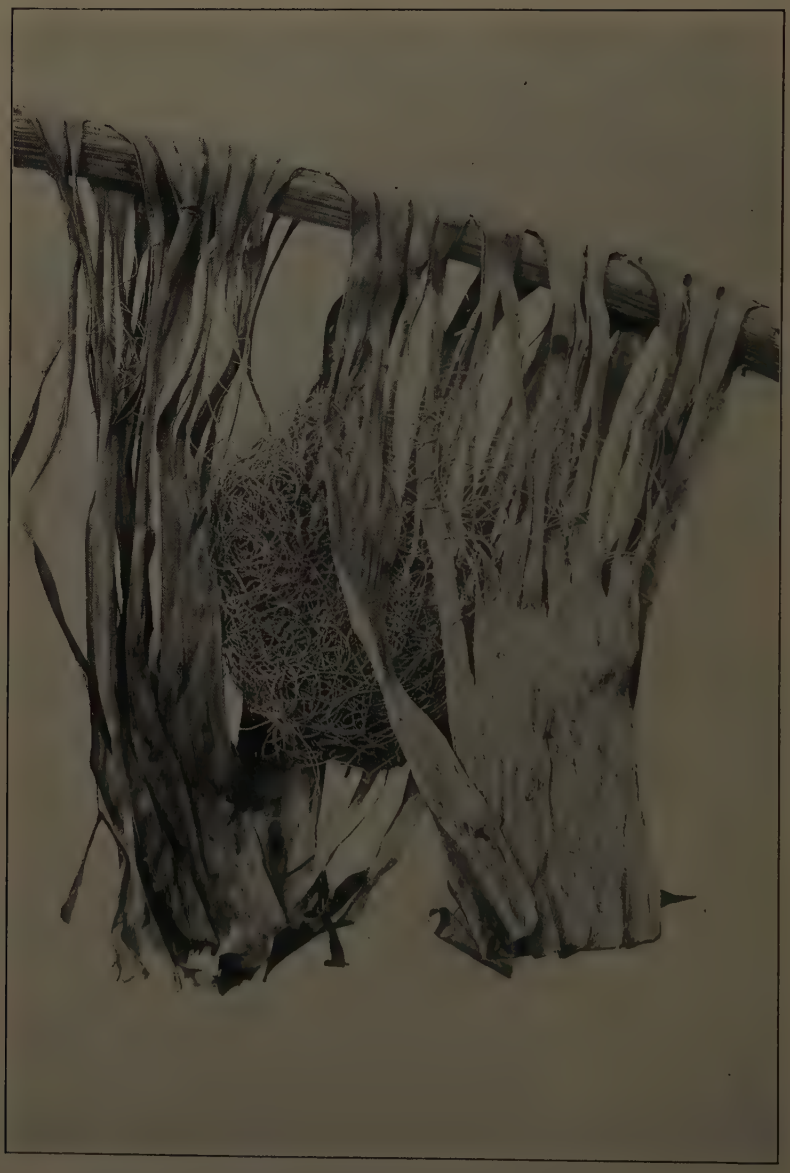
In the Rio Grande Valley is a cousin of the eastern motmot, known locally as the saw-bill, though scientifically called the blue-crowned motmot. The top of its head is covered with a tuft of blue feath-

ers which it can raise or lower at will. Above each eye is a black triangle, and a black spot trimmed in blue adorns its breast; the rest of the plumage is dark green. This unusual bird has a tail nine inches long, and presents a most striking appearance. Yet he is not satisfied with the beauty nature gave him, and so as soon as he reaches the adult age he begins to trim his tail feathers in the most fitting style.

The two centre feathers of his tail always project far beyond the others. They are smooth-edged with rounded tips, and as soon as the motmot is grown he begins to cut the webs away on each side of the spine. No one who has seen him have a mishap and cut the feathers in an unbecoming fashion, can ever doubt that he does it for the same reason that people trim their hair and powder their faces.

These interesting facts prove beyond a doubt that birds have a love of the beautiful, and as artists are in many ways like human beings. They are our tiny feathered artists of the air. Of course, not all birds have the artist's love of the beautiful in the same degree. Certain pigeons build their nests of a few sticks, just as fishermen build huts of driftwood and straw. Some swallows and kingfishers build nests in burrowed caves; and in many parts

THE ARTISTIC HOME OF THE CRESTED CASSIQUE



THE NEST OF THE CHESTNUT-SHOULDERED ORIOLE (PARAGUAY)

of the world, as on the plains of Texas, one-fourth of the human beings live in dug-outs. Robins build their homes of mud and straw; and many farmers build houses of mud and moss. There are birds who prefer gay colours in their homes, and many kinds of ornaments; the American Indian was extremely fond of such colours, and to-day we find thousands of men who delight in rich colours.

That birds are fond of music, no one doubts; the song of the mocking-bird, the whistle of the goldfinch, the call of the red-bird, the gentle cooing of the dove, the noisy chattering of the sparrow, the sad cry of the whippoorwill, the scream of the hawk, the hoot of the owl, the reed-like notes of the blackbird, the violin roll of the canary—all are convincing, and place them in the ranks of true lovers of the esthetic.

And none can doubt that the physical appearance of birds entitles them to be ranked high in the artistic world. Observe the matchless grace of the swan, the heron, and the sand-hill crane; the exquisite plumes of the ostrich and the bird of paradise; the wonderful colour of the lory and the sunbird; the marvellous coats, crests, and lappets of the humming-bird, red-bird, blue-jay, parrot, and finch; or the unusual song of the nightingale—we must

admit that they all give evidence of the greatest artistic appreciation and possession.

As Grant Allen truly says of the flower-hunting and fruit-eating species, "Surrounded for generations and generations by gorgeous orchids and trumpet-creepers, from which they suck the stored-up nectar; by gleaming purple or golden fruits; by burnished beetles, metallic butterflies, bronze-scaled lizards, and coral snakes, their prey or their enemies, exercising their eyes perpetually in the search for food among the exquisite objects of their environment, and safe from all foes except those of their own class, tropical birds have naturally developed the most gorgeous and the most perfect forms and colours in the whole animal creation. And, above all, they have stamped the mark of their peculiarly high esthetic feelings upon their own shapes by the wonderful definiteness of their patterns and their ornamental adjuncts, nowhere equalled, save in the most perfect decorative handicraft of man himself."

But notwithstanding their beauty, their works of art, and their other accomplishments, man has seen in them only the helpless victims of his own desires. With all the scientific knowledge and humane pretensions of to-day, we wage a ruthless

war upon our unresisting fellow-mortals of the air.

Unprincipled hunters kill them from an unbridled madness for gain, and to satisfy the insane vanity of worldly women, who wish to make up for their lack of charm and beauty by wearing the plumage of these delicate-winged artists of the air. For those who are so unfeeling as to eat the flesh of song-birds, like the red-bird, the bobolink, the mocking-bird, the robin, and the wild wood-doves, there is nothing to be said. They are beyond reach! They nourish the body at the expense of the soul!

The human love of ornament is responsible for the death and destruction of more beautiful birds than all other causes combined. Only a few years ago many women tried to make up for their natural homeliness by wearing not only the feathers of attractive birds, but the dead bodies as well! Those heartless women who continue to adorn themselves with feathers and birds are responsible for the perpetuation of the most unthinkable barbarities. The humane Queen Victoria did much to abolish this heathenish custom in England. She was devoted to all nature's creatures, and set a good example by refusing to wear even feathers.

"Open your eyes to the evidence," says Michelet.

"Throw aside your prejudice, your traditional and derived opinions. Dismiss your pride, and acknowledge a kindred. They are your brothers."

Even a half-correct representation of a bird's art can be conveyed to the uninitiated only by a person who not only is an artist himself, but who has that spiritual understanding and love for all his fellow-artists of the air, whatever their medium of expression. One must really be blind and deaf not to appreciate the many and varied artistic creations of birds.

Every part of the globe has its feathered artists peculiar to itself, and every one, no matter how crude his efforts, reaches out for artistic expression, just as in the human world the lowest savage is a potential artist. The North has its snow birds and deep-sea divers, whose strength and grace are their chief charms; the South has its weavers, stone-workers, makers of fine fabrics, sewers, dancers, acrobats, singers, tumblers, decorators, and aviators; the East has its prophets, professional beauties, warriors, and kings; while the West has its miners, scavengers, fishermen, carpenters, farmers, educators, and entertainers. Wherever we look, we must recognise the seeking-after and the realisation of artistic expression from the lowest to the highest of all birds.

CHAPTER II

CLIFF-DWELLERS AND MOUND-BUILDERS

They also know,
And reason not contemptibly.

—Milton.

IN America are the remains of one of the great epochs in the drama of history. On the high plateaux of Mexico, in the primeval jungles of Yucatan, in the ancient mounds of Peru, in the Western hills of the United States, we find America's Babylon, Nineveh, and Thebes. Among the ruins of the cliff-dwellers is a fascinating buried history which stretches back to the beginnings of man himself.

And second only in interest to these human cliff-dwellers are the bird cliff-dwellers, little beings who to-day have a mountain-side civilisation comparable to that of our semi-civilised forbears.

Perhaps the most interesting thing to us about these cave-dwellers, cliff-dwellers, and burrowers is that human beings have sought in such dwellings security, real or imagined. The burrowers are not,

as one might imagine, wingless and unable to place their nests in trees or precipices; they are remarkable for their powers of flight, and might choose any place they desire for their homes.

Many of these sand-dwellers seem quite unfitted for their burrowing into the earth. The beautiful capped petrel has become extinct because of its burrowing habits. It was killed in its only breeding-place, the islands of Guadaloupe and Dominica, mainly because of the exposed position of its nests, which made it the easy prey of blood-thirsty men and animals. Yet strangely enough it must have believed itself safe in such a position.

In the same way the sand martins and petrels are to-day exposing themselves to the mercy of the world by continuing to breed in exposed places. It is not uncommon to see them cluster and flutter against the sand-hills like a swarm of butterflies trying to settle over a single flower in their effort to secure the best site for their abnormal excavations.

Perhaps of all the cave-dwellers the sand martin, the smallest of the swallows, is the most human in his methods of united work. Colonies of these little feathered people combine and build regular cities by burrowing into caves, or building little mud-houses one upon the other into a structure not

unlike a human apartment house. Perfect harmony and peace seem to dwell wherever these birds live. If occasionally a couple have a little "family quarrel," they immediately cease when a group of other martins have assembled. Each family has its own apartment, and lives somewhat independently of its neighbours, yet the whole city is really one great family.

In the olden times, the people believed that the work of these little cave-dwellers was miraculous. Pliny dignified the sand martin by the following tale: "At the mouth of the Nile, near Heraclea, in Egypt, the swallows build nest upon nest, until they form a wall so strong as to present an insurmountable barrier to the inundations of the river; this dam is nearly a stadium in length, and could scarcely be constructed by human hands. Near the town of Koptos there is an island sacred to Isis, which these swallows have fortified in a similar manner to preserve themselves from the flood. In the early spring they strengthen the façade with straw and chaff, continuing their labours night and day for three consecutive days with such assiduity that many expire from exhaustion. This work has to be renewed every year."

There are a number of other cave-dwellers along the banks of the Nile. These are marsh-birds and

bee-eaters, and their cities are marvels of beauty and careful workmanship. Each bird knows his own residence, although they all look exactly alike, and in a surface of twenty square feet there are no less than fifty to sixty square holes. These little workmen constantly fly in and out in a never-ending stream, like a hive of bees. Surely no city could have a better example of brotherly kindness and consideration than is seen in these bird cities! Each individual seems thoroughly to respect the rights of his neighbours, and happiness reigns everywhere.

Not all of the burrowing birds follow the usual ways, however, for occasionally one may see them nesting on a brick wall, or on high rocks. And sometimes, even the sand martins, who in Pliny's time seemed to delight in sand-digging and burrowing, will return to their almost-lost art of building mud-houses. Nuthatches often build houses by burrowing into decayed trees; and the Assyrian nuthatch makes a mud-house under a wall with an additional mud vestibule. Thus we see that these ancient nuthatches are in reality masons.

A most interesting belief prevails in the Outer Hebrides relative to the "hot chamber" where young petrels are hatched. The inhabitants claim that the birds hatch their eggs not by sitting on

THE EGRET IS ONE OF THE MOST CLEVER OF BIRD ARTISTS

EGRET ARTISTS AT HOME IN SOUTH CAROLINA

them, but by sitting near them, at a distance of six inches, between them and the opening of the burrow. The petrels turn their heads toward the eggs, and coo at them day and night, and so "hatch them with their song." This, which sounds like a fable of the East Atlantic islands, has really a basis in fact. Mr. Davenport Graham says that the account is "very correct; though I never heard the cooing noise by day, I often did in the evening. It is rather a purring noise. When its nest is opened up, the bird is usually found cowering a few inches away from its egg. This hot and stuffy atmosphere may aid the hatching of the eggs; but there is no doubt that it brings into being other and very undesirable forms of life."

The great auk, now extinct, laid her single egg, about the size of that of a swan, in a deep burrow. This egg was so peculiarly streaked that it looked as if it were covered with strange Chinese characters —of a whitish yellow, marked with black dots and manifold small lines. If for any reason this egg chanced to be stolen, the bird would lay no more during the season. Perhaps this partially accounts for the quick extinction of this rare bird.

The strangest of all the ground-dwellers is the owl-parrot (kakapo) of New Zealand. This curious bird combines all the special characteristics of

the owl with those of the parrot. The plumage has that rich green which predominates in the parrot family, with the dark-brown markings and transverse bars, trimmed in pale yellow so common to most all owls. This bird might have been treated under the chapter on mimics as its colourings correspond exactly with its surroundings. Mr. Wood says: "I could not help being struck by the circumstance which, no doubt, is observable when the bird is in its native haunts, that its colours are absolutely the same as those which immediately surround the bird; the green colour being that of the grass, the yellow dashes the same as the oats and other green on which the bird feeds, and the blackish-brown bars imitating the soft mould of the earth."

The kakapo is nocturnal in habits. During the day it sleeps in caves in the ground, or very rarely in trees in a dark forest. If disturbed, it will hide in caves or under rocks and grass; but at night it comes out and is very lively as it feeds on grass, vegetables, seeds and roots. If pleased with its food, it continually grunts, like a pig. Its nests are very difficult to find, as they are located in deep caves, or under rocks. The kakapo is probably extinct by this time as the wild dogs of New Zealand delight in hunting and destroying it.

Many ground-builders seek burrows already pre-

pared for them. The prairie owls are famed for their system of chummage. In this case, it seems that the birds are always the guests of the animals. Although the owls are expert miners and engineers quite capable of planning and digging their own homes, like many people, they prefer ready-made ones. Sometimes one finds prairie owls, rattlesnakes, and prairie dogs all living amicably together in the same cave. And there are numerous families of otters, sheldrakes, and stormy petrels living on the best of terms in their little underground apartment homes.

These miniature houses are wonderfully arranged according to the most approved homes of man. The main gallery is occupied by the otter and the sheldrakes, while the petrels live in tiny side rooms, not much larger than a mouse's home. From the otter's sleeping room is a small canal for carrying off water, and a rubbish-hole under the entrance. To the right of the entrance is a small excavation for the storage of fish-bones and other garbage.

The prairie owls are perhaps the most daring of all the cave-dwellers in their friendships. This is due to many causes. Community of interests makes them gregarious to an extraordinary degree, while the conditions of life in desert regions make them cast their lives with the prairie dogs, wolves,

foxes, and even badgers. No one doubts that owls live at ease with these animals, but that they have any intimate family relations is to be questioned. The owls are fewest in the more densely populated prairie dog cities and most numerous in the sparsely settled towns. This is interesting, as it serves to prove that the owls have taken up their lodging because of convenience, and not for companionship.

A most remarkable partnership is that between the chickaree squirrel and the saw-whet owl. This companionship was once thought to be accidental. Some naturalists claimed that the squirrel was merely seeking a hole to escape danger that was impending. But this is not true; for they live together in perfect harmony. Although the squirrel is a very pugnacious creature, and sometimes bent upon blood, he lives amicably with the owl. When or where their friendship began, no one knows. It is truly remarkable that two creatures so widely different in habits should be parties to such a permanent and closely cemented friendship.

The guillemont is a strange cave-dweller. She often wanders far inland to lay her eggs, generally in company with others of her tribe, and seeks a cave or burrow facing the cliffs. The eggs of the guillemont are distinguished among those of Brit-

THE CLIFF HOME OF THE DUCK HAWK (PALISADES, HUDSON RIVER)

CEDAR BIRDS OFTEN BUILD THEIR HOMES IN TIERS IN TALL CEDAR-TREES

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ish birds by the fact that they are more varied in colour than those of any other species. They range from light pink to pale green. The female bird lays but one egg at a time, and, like the mother of an only child, she bestows great attention upon it. Unlike all other birds she refuses to trust this precious and only treasure in a nest, but holds it between her legs as she sits in her chosen burrow. These birds are fast becoming rare.

At Starved Rock, Illinois, a few years ago, there was a most remarkable sight. A number of scientists, Dr. Jesse M. Greenman, Mr. O. E. Lansing, and myself were collecting plants for Field's Museum of Natural History, when we came to this wonderful place. An immense rock, covered with mavellous pine trees, rose-bushes, and vines, nearly a hundred feet high, stood by the side of the river. Swallows were flying in and out of the sides of the rock like bees out of a hive; for the rock was literally covered with mud nests glued to the steep walls. It was a city indeed of cave-dwellers out of the reach of man!

The strangest and most human-like habits of cliff-dwellers, especially the swallows, is the burial of their dead. If a swallow dies in its cave, the other bird inhabitants wall up the nest, thus changing it into a hermetically sealed sepulchre. Only

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after the dead swallow is thus buried will the other members of his family continue to construct their nests in adjoining caves. If this is not intelligence, what shall we call it?

The flamingo is a peculiar mound-builder with bright scarlet plumage, a very large neck and legs, and a bill so bent in the middle that it appears to be deformed. The flamingo belongs to an ancient family of birds whose living members number only one-third as many varieties as were known among the fossil forms. Dampier, in 1683, gave a strange account of these mound-builders:

"The flamingoes build their nests in shallow ponds, where there is much mud, which they scrape together, making little hillocks, like small islands, appearing out of the water, a foot and a half high from the bottom. They make the foundation of these hillocks broad, bringing them up tapering to the top, where they leave a small hollow pit to lay their eggs in; and when they either lay their eggs, or hatch them, they stand all the while, not on the hillock, but closely by it with their long legs on the ground and in the water, resting themselves against the hillock, and covering the hollow nest upon it with their rumps. For their legs are very long, and building thus, as they do, upon the ground they could neither draw their legs conveniently into the

nests, nor sit down upon them otherwise than by resting their whole bodies there, to the prejudice of their eggs or their young, were it not for this admirable contrivance, which they have by natural instinct. The young ones cannot fly until they are almost full-grown; but will run prodigiously fast."

This account of the method of incubation is very incorrect. The truth is that the old birds sit upon their island-like nests, just as other birds do—without injury to the eggs or to the young. These cup-shaped nests are sufficiently deep for all necessary protection. From this elevated position the flamingoes can fish while sitting on their eggs. Great numbers of these birds live in Florida and in the Philippine Islands, where they often congregate by the thousands into colonies.

Not the least interesting and surely the most paradoxical of all cave-dwellers is the bat. These strange "children of Erebus" have something obsolete in their general make-up. In the Davonian monster-period, skin wings were quite the fashion, but to-day they have gone out of vogue. It is a curious fact that all winged mammals are now nocturnal in their habits, as if they feared competition with their day-light contemporaries. Most of the skin-winged creatures, like the winged lemur, the flying fox, and the flying squirrel, dread sunlight

as witch-doctors dread the light of investigation; and the same is true of bats. Though most moonshine creatures have exaggerated eyes, those of the bat are almost as rudimentary as are those of a mole, or of the weird fishes that were ejected from the subterranean tarns of Mount Cotopaxi.

It is for purposes of self-defence, shelter and rest that bats seek caves. At times they seem perfectly contented to sleep in the same cave with rattlesnakes. There are a number of such caves in the Philippine Islands where thousands of bats dwell in dark caves with huge rattlesnakes, and in the twilight all of them pour out at the same moment, a living flood of staggering night-wanderers. Aristotle classed bats with birds, and in many respects they are the creatures par excellence of the air. "With the sole exception of the Javanese roussette, bats are completely at sea in the water, and almost helpless on terra firma; they eat, drink, and court their mates on the wing, and the Nycteris thebaica even carries her young on her nightly excursions. Nay, bats may even be said to sleep in the air, for they build neither day nests nor winter quarters, but hang by the thumbnail, touching their support only with the point of a sharp hook. But this hand-hook connects with muscles of amazing tenacity.

"In cold climates, where bats have to club together for mutual warmth, fifty or sixty of them have been found in one bundle, representing an aggregate weight of about fifteen pounds, all supported by one thumbnail! The head-centre, or the one that supports the weight of the group, must sleep as warm as a child in a feather-bed; but it is hard to understand how the outsiders can survive the cold season, for, in spite of their voracity, bats accumulate no fat, and the flying membrane is a poor protection against a North American winter. The only explanation is that their winter torpor is a trance, a protracted catalepsy, rather than a sleep; hibernating bears and dormice get wide awake at a minute's notice, but I have handled bats that might have been skinned without betraying a sign of life, and needed more than the warmth of my hands to revive them, for their wings were quite brittle with rigid frost. Bats prefer a cave with tortuous ramifications that shelter them against draughts, but still with a wide though not too visible opening, as they do not like to squeeze themselves through narrow clefts. A dormitory combining these requisites is sure to attract lodgers from far and near. . . . The Mammoth Cave, with its countless grottoes, has only two bat-holes, whose

occupants have never been known to change their quarters."

The only American bird known to choose a permanently damp cave or ledge of wet rocks for its home is the water ouzel, or American dipper. This bird is so eccentric that it prefers its nest under a continuous shower, and spends most of its time in, not on top of, the water. Perhaps the very shower of water through which he must pass to enter his home serves to protect his young from preying animals and birds. The ouzel babies are reared by the lullaby of the spraying waters. How fascinating these water babies look when they first go forth into the world! They are neatly attired in slate-coloured feathers, with white feet and white edgings to some of the feathers, and a bunny-like tail to match.

Not the least attractive among these rock dwellers is the sprightly little cañon wren. One must have good eyesight and exercise much patience to see these tiny creatures. At a distance they look like flies running on a wall. In and out among the rocks flits the miniature cave-dweller, gathering a bit of moss here and there for her cave-mansion, entirely unconcerned about the hundred feet of cliffs stretching below her and the foaming stream at their foot. Occasionally she zigzags her way to

The penquins are social birds who live together in colonies near the sea, making of the cliffs a city of penquin apartment houses.

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the top of the cliff, showing absolute familiarity with her mountain home.

The most beautiful and far the most diminutive of all the cliff-dwellers are certain varieties of humming-birds. They appear most abundant in the mountainous regions of South America, especially in the high Andes, where there are hundreds of different species. Here, if one is especially lucky, he may occasionally find a nest attached to the side of a high cliff, or overhanging rock. The nests are marvels of beauty and wonder. They are usually cup-shaped, and formed of plant down woven together by silver spider's webs. The outside of the nests is covered with lichens, mosses, and sometimes with dried flowers or feathers.

Oven-birds are the aristocrats among the cliff-dwellers, and are not satisfied with one chamber, but build two in the clay not unlike ovens—hence the name. These are common sights in South America. Like their friends, the swallows, they sometimes convert a nest into a sepulchre by closing up the entrance when a bird has died. It sometimes happens that an underground city, in case of an epidemic among the inhabitants, becomes a cemetery!

A cousin of the oven-bird, which closely resembles this interesting home-maker in the reddish tint

of its feathers, is the casarita, which means "little house-builder." The nest of the casarita is usually found at the bottom of a cylindrical tube which extends from five to six feet underground. This bird is common in the La Plata region of South America, and boys who attempt to dig out the nests are rarely ever successful, owing to the length of the tube. An unusual thing about this otherwise intelligent little creature is its absolute incapacity for acquiring any ideas of thickness. It will continually attempt to bore nests in thin walls, with apparent surprise when daylight is reached on the opposite side!

The custom of building mounds for nesting-places has been extensively adopted by many species of birds in Australia and elsewhere. The mallee-bird makes a mound or nest in the most peculiar way by bringing together gravel and vegetable matter. These are mixed almost in the same manner as a brick-maker mixes his mud and straw; and as the vegetable matter decays a sufficient amount of heat is produced to hatch the eggs.

Dr. Grey informs us that the mallee's nest occasionally measures thirteen yards about the base and is about two feet in height. In a letter in 1842 he wrote: "The mound appears to be constructed as follows: A nearly circular hole, about eighteen

inches in diameter, is scratched in the ground to a depth of seven or eight inches, and filled with dead leaves, dead grass, and similar materials, and a large mass of the same substance is placed all around it upon the ground. Over this first layer a large mound of sand, mixed with dry grass, etc., is thrown, and finally the whole assumes the form of a dome. . . . When an egg is to be deposited, the top is laid open and a hole scraped in its centre to within two or three inches of the bottom layer of leaves. The egg is placed in the sand just at or near the edge, in a vertical position, with the smaller end downwards. The sand is then thrown in again, and the mound left in its original form. The egg which has been thus deposited is therefore completely surrounded and enveloped in soft sand, having from four to six inches of sand between the lower end of the egg and the layer of dead leaves. When a second egg is laid, it is deposited precisely in the same plane as the first, but at the opposite side of the hole before alluded to. A third egg is placed in the same plane as the others, but, as it were, at the third corner of the square . . . the fourth in the fourth . . . the figo
ure being of this form—o o; the next four eggs
o

in succession are placed in the interstices, but always in the same plane, so at last there is a circle of eight eggs, all standing upright in the sand, with several inches of sand intervening between each. The male bird assists the female in opening and covering up the mound, and provided the birds are not themselves disturbed, the female continues to lay in the same mound, even after it has been several times robbed. The natives say that the hen bird lays an egg every day."

The eggs are hatched by the heat engendered by the decaying vegetation, and the young birds, unaided, push their way slowly to the outer world. The parent bird forages in the neighbourhood, awaiting the brood, and soon finds them and begins their rearing. Thus the mound is not used as a nesting-place in the strict sense as with other less educated birds, but as an incubator; and the mother bird escapes the long monotonous task of hatching the eggs by the heat of her body.

Other birds build even bigger mounds than the mallee; some of these have been known to measure fifteen feet in height and sixty feet in circumference. The jungle fowl builds a mound of varying proportions, never less than five feet in height. Generally these mounds are placed over or near ant-

hills so that the young may find food in their journey to the light of day.

The skill shown by these birds in the construction of incubators for their eggs is most remarkable when we consider that in the different parts of the country where they range, the materials at hand vary widely in kind and quality. Yet they are uniformly successful. They are engineers of great ability and ingenuity, and seem to know just how and in what quantities to mix whatever materials the region affords. That they understand in some measure the natural principles which they employ is shown by the intelligent care they take in the choice of vegetation and in the scrupulous removal of all decayed matter of the previous year.

Some mound-building birds band together to accomplish their work, and the fairness and good-fellowship they show would put human labourers to shame. They all join heartily in the task, and the result proves the wisdom of co-operation. Indeed these birds have solved many of the most serious and complicated problems of their existence in a way that would do credit to human beings, and their methods are not unlike those of man in the early stages of development.

CHAPTER III

POLICEMEN OF THE AIR

Sometimes the linnet piped his song:
Sometimes the throstle whistled strong:
Sometimes the sparrowhawk, wheel'd along,
Hush'd all the groves from fear of wrong.
—Tennyson.

NOWHERE in the entire range of life is there a greater wealth of romance than in the police systems of the bird world. And the companionship of those people whose lives are spent among the whirl of city streets, I especially desire, that they may accompany me to the mountain-side, across treeless prairies, among the hedge rows, across the grain fields, through the deep forests, and lastly to the high cliffs, that we may together be students of nature, and learn that "the world is perfect everywhere, when still unblemished by man's ruthless hand."

Up to the present time in man's civilisation it has been necessary for him to have a police power of some kind in all territory where he expects to remain in safety. The same is true in the bird

world where the earth, the air, and the water all have their special guardians. Though we seldom realise it, these police systems are invaluable to mankind. The woodpeckers, famed for their chisel-like beaks, are able to dig into the bark and wood of trees and perform untold service for man by destroying the hidden larvæ that kill the forest trees.

The eagle gives us a splendid example of strength and nobility among policemen of the air. This noble bird is by nature and character symbolical of power. The old legends place him by the throne of Jupiter, "holding in his talons the thunderbolts which the Deity was supposed to rain down upon this hapless earth of ours: the allegory is apt, for the eagle, himself a mighty king, dashes upon his prey, like a flash of lightning, with resistless power." He is indeed the terror of the air: his proudly erect body, the ruffled lance-like feathering of the head, the piercing eyes, the scissor-like beak, and the stiff, pendant tail serve to impress us with his power and nobility. He is ruler of the day! And king of the air!

There are many varieties of eagles, and one of the most powerful, the bateleur eagle of Africa, is called by the natives the "Ape of Heaven." Its flight can be at once distinguished from that of any other bird. At one instant it darts off like a

wild deer, momentarily hangs suspended at a giddy height in the heavens, without the motion of a feather, then shoots rapidly upward like a sky-rocket, till out of sight, returning to earth like a leaden ball, amid a complicated acrobatic performance, like a tumbler pigeon. Mankind may well cast envious glances at this marvel of the air. No wonder Nature's untutored children in the "Land of Ham" have called him the courier of the gods! There he has a permanent place in their rhymed songs and sayings.

The Egyptian vulture is a common sight in the villages and towns of Upper Egypt and Nubia. He seems to have no fear, as he patrols his beat, and he is rarely disturbed by the natives. He will perch on low trees within a city and sometimes alight on the streets to get a bone. If other birds disturb him or come into his regular territory, he soon drives them away. Although he is friendly with the kingfishers of the Nile, and is sometimes found in company with the much-respected hooded crows, he is the deadliest enemy of all other members of the feathered tribe.

So completely is his authority established that he actually breeds in small trees in the towns, without fear of being disturbed. Birds know that they can implicitly trust the Arabs; for these people have

sentiments so noble and deeply founded that even the wise eagles trust them; the turtle doves alight on their hands; the night herons roost in low trees in the heart of the towns; the thick-kneed plover plays on the house-tops; the stilt wades in the village ponds; while the magnificent buff-heron follows the milk-cows home. In fact Cairo was founded because of hospitality extended to birds. The Caliph's general, Abd-Allah-Omahr, once refused to allow his tent to be struck because a turtle dove had built its nest upon it, and the young doves were still unfledged when the General desired to march.

The golden eagle is a veteran policeman. His sturdy build, his powerful weapons, marvellous eyes, air-ship wings, and his home among the clouds make him indeed the lion of the bird-kingdom! He is the king of the air, although he is by no means the largest among the eagle family, as several kinds of sea eagles are a size larger. The golden eagle is at home in all parts of America, throughout Europe, and in Asia. He is strictly a lover of the mountains, and is found among the highest passes and cliffs. In Switzerland he is found only in the Alps. In speaking of this mountain king, Tennyson says:

"He clasps the craig with hooked hands;
Close to the sun in lonely lands,
Ring'd with the azure world, he stands.
The wrinkled sea beneath him crawls;
He watches from his mountain walls,
And like a thunderbolt he falls."

From his mountain beat he surveys the surrounding country far and wide. As the Bible says, "he sees afar off"—nothing escapes his eye. At certain intervals he sweeps noiselessly along as his glances search the distant hills and valleys below for prey. Suddenly, when he sees an animal below, he closes his immense wings and descends to the earth with a terrific thunder-like sound, his huge talons open ready to grasp the hapless creature. Nothing is safe from his terrible claws. Nothing is too large or too small for him. His eerie on the high cliffs tells its own tale of murder: around it is a veritable boneyard which has accumulated during the young eaglets' nursery days.

The golden eagle is a very undesirable officer in the vicinity where he is king. The enormous amount of food his young consume, not to mention himself, makes him a great enemy to all forms of life. His eerie is very rarely accessible to man, as it is usually placed at the highest point of a cliff, or in the crown of a very tall tree, and oftentimes

THE GOLDEN EAGLE AND ITS EERIE HOME (WYOMING)

THE BARRED OWL, A POLICEMAN OF THE NIGHT

at the head of a river. The nest is unbeautiful, yet so large and strongly built that a man could lie down with safety in it. The lower layer is built of large sticks, often brought from a great distance, and then covered with small twigs, while the bed is formed of soft grasses, wool, goat's hair, feathers, cotton, and various fluffy silks and threads from plants. It is interesting to watch a happy couple of eagles in March gathering the materials for their nest. They whirl and soar in the clouds, rising higher and higher, as though they were giving aviation demonstrations. Even after his mate is setting, the male continues to give these soaring exhibitions. There are usually two eggs in a nest. They are large, round, bluish white, speckled with reddish-brown.

When the young have hatched, the nest is more like a butcher's shop than anything else. Everything from lamb-chops to young squab is served to these ravenous downy eaglets.

There are many varieties of eagles, and their ways and methods of hunting are as numerous as they are diverse. Even Solomon admitted that he could not understand the "ways of an eagle." The male and female often hunt together, flying a short distance apart. They scour over mountain range

after mountain range, with apparently no thought of the valley far below.

This glorious bird is king of the mountains, the true lord of the high places of the world. He lives in a region of pure air and blinding sunlight, and evidently looks upon men as helpless crawling things fit only to live in valleys. Round his earliest cradle bright snowflakes glisten like diamonds in the sunbeams which, early and late, colour the surrounding hills with rich blues and purples. He makes his home between rugged crags, with the shiny glacier as his private skating pond. He is an integrant part of the cliffs and precipices—a complement of the eternal snows. Wherever the hand of God had heaped together mighty masses of rocks and piled them toward the skies, wherever the snow spreads its white mantle and sends icy streamlets trickling toward the valleys, there will this policeman of the skies be found. He claims every mountain as his natural birthright.

One of the most terrible and vindictive of the bird warriors is the kea parrot of New Zealand. This bird, formerly a patrolman of nature in keeping down insects, has become a veritable despot. Living among the foothills and mountain peaks, it used to descend to the lowlands in winter, to obtain food. But the introduction of the sheep-

raising industry made it possible for it to eke out an existence on the scraps of offal.

Later these blood-thirsty parrots became so bold as to attack and kill sheep. The manner in which they do this is revolting in the extreme, and for many years scientists in other parts of the world refused to believe the wild tales of their terrible crimes. They hunt in great numbers, like hungry wolves, and pounce upon any luckless sheep that strays from the herdsman's care. Lighting upon its back, they quickly tear away wool, hide, and flesh in search of the tender part about the kidneys. This they despatch with gluttonous haste as the poor animal falls and dies. Then they leave the carcass untouched to seek another victim and again regale themselves upon its living vitals.

No bird of prey by nature carnivorous is so deadly and so wasteful as these degenerate grain-eaters. At times they seem to seek some new and terrible mode of destroying the sheep; for instance, some of them live during certain seasons entirely upon the tongues and eyes of young lambs, which they ruthlessly pluck out of the living animal. It is not uncommon to see these helpless creatures tongueless and eyeless from the fiendish attacks of the feathered hyenas. So bad have these bird-terrors become that some sheep-runs have had to be

abandoned, and a bounty has long ago been set upon their lives. Indeed they have become so bold as to attack horses and other large domestic animals.

Fly-catchers have a most novel and interesting way of patrolling their territory: concealing themselves among the branches of trees, they patiently await the appearance of flies, bees, butterflies, and other insects, and greedily pounce upon them. Again and again they return to the same stand and wait for their prey.

Swallows and swifts sail high in the air, and follow a system of intricate curvings and divings in search of insects which fly above the tree-tops. Humming-birds sometimes hunt in pairs, and one enters a large cup-shaped flower to catch the insects within, while the other bars the door!

In many places in the South hundreds of bats appear at twilight, dashing here and there to catch insects. At times, in their anxiety to catch mosquitoes, they actually fly into the face of an observer. These night-watchmen are invaluable in their service to mankind through their destruction of myriads of noxious insects.

Perhaps the most important nocturnal policemen are owls. They are many in number and variety of species, but the eagle owl is the paradox of

the bird kingdom. It is savage, dull, miserable, and sad! It is the terror of the night, and the largest of all known owls—two feet long, with wings six feet in expanse. Its home is usually in the loneliest forest, among ancient walls, monasteries, ruins, or on a steep precipice near a small village; even in an old church tower they are found. Wordsworth justly speaks of this king of the night in the following lines:

"Grave creature!—whether, while the moon shines bright
On thy wings opened wide for smoothest flight,
Thou art discovered in a roofless tower,
Rising from what may once have been a lady's bower;
Or spied where thou sitt'st moping in thy mew
At the dim centre of churchyard yew;
Or, from a rifted crag or ivy tod
Deep in a forest, thy secure abode,
Thou giv'st, for pastime's sake, by shriek or shout,
A puzzling notice of their whereabout—
May the night never come, nor day be seen,
When I shall scorn thy voice, or mock thy mein!"

This fantastic officer of the night ruffles his feathers in such a manner as to make himself appear twice his actual size. Naumann in referring to him says: "In that large, shapeless mass of feathers, one can scarcely distinguish the limbs; the half-closed eyes hide their glorious rays; suddenly the bird opens them wide, bends the head and upper

part of the body forward, swaying from side to side, and, raising first one foot and then the other, begins to tremble, winks slowly with the eyelids, spits like a cat, and snaps its bill; when angry, its eyes flash fire, it bends forward with hanging wings, ruffles its plumage as much as possible, and, snapping and hissing, dashes furiously at the enemy."

The eagle owl is justly hated by all day birds, for he preys on every living creature that comes within his ken. He is a murderer of the lowest degree, and seeks the darkness of night to do his vile deeds. He noiselessly enters caves and flies in and out among the trees to kill his prey. Nothing is safe from his moonlight eyes and piercing talons. It is small wonder that this Prince of Darkness, if discovered during the day taking his siesta, is pounced upon by myriads of enemies.

Nothing sounds more ghost-like than the "Poo-hoo! Poohoo!" of these owl policemen as they signal in the darkness. An entire forest is frightened by their strange and weird noises, so uncanny as to make one's hair or feathers stand up! Their shrill, mocking laugh, weird imitations of wolves, screaming hyenas, and a hissing sound like that of an immense serpent—all these are calculated to give rise to strange and ghostly beliefs concerning them. Even the truth of the legend of the wild huntsman

is not unthinkable! And one is reminded of Bolton's words:

"What time the timid hare limps to feed,
When the scared owl skims round the grassy mead;
Then high in air, and poised upon his wings,
Unseen the soft, enamored wood lark sings."

Another interesting officer of the night is the nightjar or fern owl. He also belongs to a numerous family whose individual species the Spanish call by various names, such as "the father of the wind," "shepherd's deceiver," "big-mouth," "ghost-eater," "death watch," and "spirit breeder." By form and colouring he is well fitted to conceal himself from sight. His coat of feathers is spotted and blotched with innumerable shades from dark brown to light greenish-grey, not unlike the colour of hickory bark. His broad head has a small beak, but an enormous mouth, trimmed with long hairs. The large gape enables the bird easily to catch moths and beetles whenever he goes forth. On moonlight nights he hunts all night, hawking insects and swallowing them alive until his crop is gorged full.

His song is most pleasing. In America he is commonly known under the name of his "whip-poor-will" melody. It is a nocturnal serenade that is unsurpassed for its beauty and charm.

Nearly all types of birds perform certain duties in nature which help to keep the balance in the animate world. And those species which contribute by their activities to the welfare of man are naturally the most interesting to us. Many times in his history has man been relieved of overwhelming pests, and received constant protection against ever-present menaces to his safety or well-being, by his feathered brothers of the air. In the words of Longfellow:

> "You call them thieves and pillagers; but know
> They are the winged wardens of your farms,
> Who from the cornfields drive the insidious foe,
> And from your harvests keep a hundred harms;
> Even the blackest of them all, the crow,
> Renders good service as your man-at-arms,
> Crushing the beetle in his coat of mail,
> And crying havoc on the slug and snail."

In the past man has been more or less blind to this fact, and has consistently wronged many of his allies through his own ignorance. Wars of extermination, which have been carried on from time to time, when successful, have nearly always brought heavy penalties. Birds prey upon all kinds of vermin, which, when no longer kept decimated, often overrun and destroy the harvests, and men are helpless to aid themselves. Locust-birds

are the only exterminators of locusts. Rodents and other prolific mammals would do untold harm were their numbers not kept down by the bird police.

A notable example of this kind may be found in the great vole plague in England in 1890-2. At this time the common field-vole multiplied to such an extent that whole districts were threatened with utter ruin. The plague was curbed only by the aid of birds of prey, especially kestrels and short-eared owls.

Birds also accomplish many other works of nature by which the earth and man are benefited. Plant seeds are carried and widely dispersed in the crops, talons, or plumage of most birds. The policemen of the air are important agents in these works for the good of all life upon this planet.

It is unfortunate that only a few rare souls in the human world realise how invaluable to mankind are these wild creatures of the air, whose equipment is unequalled for the part they have to play in keeping nature's balance just. They are the greatest friends of all farmers, stock raisers, and fruit growers; and they should be regarded as man's most valuable allies, without whose aid agriculture could not be carried on with great success. The destruction of birds means disaster in the long run. America and England should be justly proud

of what they have already done for the protection of their feathered friends, and press on to larger accomplishments. Let every man respect and protect the natural policemen of the air!

CHAPTER IV

DANCERS

. . . And round and round
The plovers wheel, and give their note of joy.
—Southey.

IN no way do birds show their human qualities more than by their love and perfection in the terpsichorean art. They are very similar to human beings in this desire. Some like dancing because it enables them to display their gaudy feathers and beautiful and graceful forms; others consider that it is an exceptionally attractive social grace; while still another group, with a subtler intelligence, are enabled to express in their dancing the joy of life and its conflicting emotions.

Victory, defeat, beauty of scenery, and favourable climatic conditions for hunting are some of the occasions for a dance. The birds are like the American Indian, who introduces dancing at every possible occasion. The fact that the female bird is rarely allowed to join in may be explained by saying that most often the male is endeavouring to

win the admiration of the less pretentious members of the other sex, just as the Indian dances best in the presence of the squaw whom he wishes to win for his wife.

The American sharp-tailed grouse is perhaps the Isadora Duncan of the bird world. This interesting dancing family thrives from Illinois to Alaska. They begin their dances in the early spring after getting their plumage in the most beautiful condition. The grouse assemble in small groups, and wander around until another group is found; these unite and the increased flock circle until still another flock arrives. This continues until a flock has reached the proper number. Then follows a most elaborate preparation for the auspicious occasion.

The ballroom floor is nothing more nor less than a plot of ground of trampled grass about forty or fifty feet square, located in small shrubbery so as to be concealed from curious eyes, or enemies. When this is in readiness the female birds demurely retire to the edges of the grass-plot, where they may watch the dance while they are themselves half hidden by the surrounding shrubbery. As all of the males wish to participate, there are no professional musicians but each male furnishes his own music. Ruffling up their neck feathers, dropping their gawky and rapidly vibrating wings close to

the earth, elevating their beautiful tails, these male ballet-dancers waltz round and round each other, whirling sometimes one way, sometimes another. Suddenly they arise, inflate their bodies like small balloons and assume the most soldier-like attitudes; slowly, like important dignitaries exchanging courtesies, they move around in groups, advancing and retiring with dignity befitting the occasion. Occasionally they chatter to each other, as if in praise of their wonderful achievements, or perhaps it is to encourage to better efforts some awkward member of the ballet!

These "chicken stamping grounds," as they are called in the West, are often used for several seasons. Unless the birds are disturbed they return to the same courting grounds indefinitely. Westerners tell us that occasionally the same spot has been used for their dances so long that small runs or roads are made to it from all directions. These ballrooms are invariably located in good feeding districts, and are frequently near rivers.

A cousin of the cranes and herons, the hammerhead, lives in Africa and Madagascar. He is an unusually talented bird, being a skilled architect, an astronomer, and a clever dancer. He is about the size of a small raven, and builds his gigantic mansion, sometimes six feet in diameter, on a rocky

ledge near a stream of running water, or in the forks of a low tree. This home is very substantially built of grasses, roots, sticks, with a slanting, flat-topped roof.

The interior is lined and decorated in red clay, and there is a small entrance at the side which leads into the main hall. A number of various kinds of bone specimens are always found within this student's home, but evidently they are not there for study purposes even though he does look somewhat like a student and a philosopher. As an architect he ranks among the best. His living-room is beautifully formed, and is divided into a living-room and a nursery. This makes three distinct rooms in all, if we count the hallway. He also shows his artistic ability by the manner in which he decorates the outside of his home with trinkets and ornaments.

He is a very peculiar being in his dress of brown, trimmed in a purplish sheen; the head-dress is so arranged that it looks like a hammer—thus his name. And withal his ways are quite as odd as his appearance. In speaking of him, M. Oustalet said: "He may be observed for hours at a time walking upon the river-bank like a peripatetic philosopher. Marching solemnly along with shoulders humped, and gazing earnestly upon the ground, he appears

to be engaged in profound meditation; occasionally he shakes his head vigorously as if to drive away some importunate thought. But he is engaged in no more intellectual occupation than a careful search for his supper of small mollusks."

If a female hammer-head chances to move near him, he suddenly opens his wings and begins to dance in the moonlight for her and with her. When the dance is ended, he again assumes a ministerial air quite befitting so learned a creature.

The great bird of paradise assembles in a large tree with a number of fellow artists who gather to dance and display their elegance and beauty. Here, where there is plenty of room among the foliage, these exquisite creatures raise their wings over their backs, curve out their necks, while their rich, golden side-feathers are kept in perpetual vibration. Of course, they have to hop from branch to branch, if they wish to change positions, and they are more like a flying ballet than a group of regular dancers.

The sage cock, a native of the foot-hills and prairies between western Kansas and the Sierra Nevada and Cascade Ranges, drums as well as dances to win a bride. He is not quite so skilled in dancing as many of his cousins of the West, although he is a magnificent artist at parade. No

regiment of soldiers could equal the stately poise and steps in which he so frequently indulges. With his fan-like tail gracefully spread, his neck poised in the most approved military style, wings stiffened and arched to the ground like the sails of a boat, he marches, struts, drums, wheels, constantly producing a deep guttural and altogether unlovely song until some lonely female accepts him for a mate.

The dusky grouse also drums for his own dance. He dances not only during the day, but also the early part of the night during the mating season. Evidently he does not believe in letting the object of his affection have a chance to think alone over his proposal. His song is totally lacking in charm, and is more like a whirring or guttural whining than real music. This he produces by an alternate inflation and contraction of the air sacs in his throat.

Perhaps among the classical dancers the wild turkey gobbler should be ranked as a leader! His dances consist chiefly of graceful poses, marches, and wheelings done with an airiness and grace possible to few artists. Occasionally he springs up in the air precisely as if he had been turned suddenly into a feather-like ball and was floating upward without any effort.

PRAIRIE CHICKENS ON ONE OF THEIR DANCING-GROUNDS

THE RUFFLED GROUSE IS ONE OF THE MOST INTERESTING OF THE DANCING BIRDS

Should the turkey hens refuse to pay attention to his marvellous stunts, he continues to stretch his wings to his sides as he assumes the most varied and commanding positions imaginable and clucks as though he were saying, "Notice me! Behold my grandeur! Am I not a wonder?" And should a lovely bronze belle deign to notice him, he displays his plumage to the greatest advantage by spreading his massive tail, sweeping the ground with his quivering and expanded wings, while his proud head is drawn back with the dignity of a prancing circus horse.

Should he be approached by a rival wooer, then a battle royal ensues, and ends only in death or a dishonourable retreat by one of the contestants. The victorious warrior is truly a proud bird! He struts through the woods, loudly announcing his victory and calling attention to his magnificent warrior-like proclivities.

One of the most singular, surely the most beautiful, and perhaps the most versatile, feathered artist is the lyre-bird of the Southern Archipelago. It is difficult to classify him according to any one of his accomplishments. He is ranked among the mocking-birds as a songster; he is one of the leading birds as a trick-artist and imitator: he mimics the sound of everything from a croaking frog to the

cry of a child; and not the least among his accomplishments is his dancing. In this field he is unique indeed.

Perhaps no other bird dancer has a more delightful and varied costume, though his large feet would seem to be against him. His exquisite lyre-like tail, from which he derives his name, is the glory and the despair of other dancers. This feathered instrument is formed of two wonderfully curved outer feathers with transparent patches of delicate, silk-like feathers which appear like notches extending along the entire inner side of the web; there are also a number of soft, fairy-like plumes resembling the feathers of the bird of paradise.

The lyre-bird's plumage attains perfection only after four years of growth, and then it remains with him for only a brief period before it is moulted. He is very proud of his wonderful lyre, and when he travels through the woods he carries it straight in line with his body. This assures its protection. When he wishes to attract the attention of the opposite sex, he sings and dances, hops and jumps, springs up into a nearby tree, flops again to the ground, goes through all sorts of weird and graceful movements and gestures, and poses his body in all imaginable ways. This is followed by a series

of pecking movements which he accompanies by a movement of his tail as he sings.

The ruffled grouse, whose habitat extends from Texas to Canada, and from the Atlantic Ocean to the Pacific, is both a dancer and a musician. His special instrument is the kettle-drum, although at times he produces a booming sound with his wings. His favourite ballroom is on a dead log. Here he displays his soldier-like costume and handsome body in a series of most remarkable dances. Unlike many of his cousins he refuses to dance the ordinary minuets and quadrilles, but gallantly struts up and down the log, swelling his body to the music of his own making, until a handsome female chances to appear on the scene. Should he seem to have no audience, he stops his dance long enough to produce a booming sound with his strong wings. This amusement is continued until an audience has assembled and some fair grouse has chosen him for a mate.

It sometimes happens that two or three grouse assemble and dance on the same log. The drumming occurs between February and April and continues until all the birds have mated. The spruce partridge of Canada is famed for his soldier-like ways and rustic dancing. Dancing, however, is secondary among his wooing accomplishments.

Drumming comes first; and this is done in a most unusual way. As he rises in the air and descends with his broad tail expanded and vibrating, a peculiar metallic sound is produced. It is not very musical at best, but all the female partridges from far and near come to hear and see the wonderful performance.

It sometimes happens that a lively combat ensues, and terminates only in death. This battle is often fought right on the dancing-floor and the females take unusual interest in it. After the battle has ended and the lucky bird has won his bride, all dancing and drumming ceases and perfect harmony follows.

Truly wonderful is the dainty dancing of the little English sparrow. It often happens that several males will dance and chirp in rivalry for the same female. This interesting and sometimes despised little sparrow is perhaps the best friend man has among birds. He is indeed in the bird world what the dog is in the animal world. One who knows his wonderful habits must believe as Cornwall, that we should not harm him:

> "Touch not the little sparrow, who doth build
> His home so near us. He doth follow us
> From spot to spot amidst the turbulent town
> And ne'er deserts us."

This bird celebrity is perhaps the most abused and misunderstood friend of the human race. He is strictly a city bird; and mankind seems especially informed about his disagreeable habits, with little knowledge of how much good he does for the human race. His sins and shortcomings have been greatly overestimated. Let us learn something about this abused friend of ours. He is surely among the most intelligent of birds, living always on intimate terms with man. It is this intelligence that causes him never to trust the lord of creation. A young sparrow is stupid, but an old one is a sage. He is famed for his cleverness, cunning, patience, persistence, caution, and the ability to act and dance. As a protection to city parks, trees, shrubbery, and flowers he has no equal. In fact, if it were not for the sparrows in these days of pests, we could have few city flowers or even trees.

"The abuse of the English sparrow," wrote Archibald C. Weeks, in the New York *Tribune,* "is due to ignorance and unwarranted prejudice. No person is competent to judge of birds unless possessed of a thorough knowledge of the activities and life histories of insects and competent to differentiate between the beneficial and injurious. There is no bird which can measure up to the spar-

row in the destruction of noxious insects or as a promoter of sanitation.

"The claim that it drives away other birds is largely unfounded. It does not frequent the forests, where the native birds are left undisturbed, but clings to human habitation, the more dense the better, where few other birds could safely nest or obtain food even if there were no sparrows. It is a marvellous destroyer of the cutworm and can even rout the moth from its concealment in the grass, which no other bird seems to be able to do. As a consumer of thistle and weed seeds it has no equal except perhaps the quail. In New York City the spring and fall canker worms (geometrid larvæ), which formerly defoliated the shade trees, are now so rare that the collector has difficulty in obtaining a specimen for his cabinet. Few insects are safe from the bird. The imported European leopard moth, whose deep boring larvæ are nearly immune from destruction, is effectually checked, as the sparrow consumes the moths as they lie prone on the surface of the ground under the electric lights which attracted them the previous night.

"I suggested starvation as a means of insect control over 25 years ago. The United States Health Service has adopted my suggestion for the purpose of eliminating the rat by advising the storage of

all grains in inaccessible containers. The object sought is to prevent this rodent, through the medium of its parasitic flea, from acting as a purveyor of bubonic plague. The sparrow, however, is doing the most effective part of the work by consuming every particle of scattered grain throughout the streets and around barns and granaries, and also all food products derived from grain, which are strewn more or less plentifully over the surface of the ground in every yard, street and dumping place. Not only are rats and mice thus prevented from obtaining sustenance, but the attracting, breeding and multiplication of house and other flies and various other insects are prevented."

Love plays a prominent part in the active life of the sparrow; he courts from morning until night, if he is unmated. He bows and scrapes and parades himself before his love in all the glory of his rich brown uniform trimmed in white and tan stripes, with such perseverance that the shyest sparrow belle could not resist his wooing. As soon as she accepts him, they fly away to a suitable place to begin preparing their cosy apartment—as he also is an apartment dweller like man.

As soon as a young family is started, the father and mother work from early dawn to sunset feeding the babes. If other birds come near the nest,

quarrelling and fighting results, as Mr. and Mrs. Sparrow are valiant defenders of their homes. The young, as soon as they are able to fly, are also taught to defend themselves, for their parents know well the brawling routine of sparrow life.

Crows have wonderful dances, but they are difficult to describe because of their variations. They hop, skip, jump, run, turn somersaults, change positions, seemingly salute each other, suddenly stop and fly away. The same may be said of wild geese and ducks, though these birds hold most of their sports on the water and their dancing is more on the order of aquatic sports. Cranes and ibises dance both in water and on land, although all of their dancing appears more like some form of Indian ceremony than actual dancing, as it often takes place just preceding a battle or a migration. It may be their form of council meeting, for certain ones seem to wish to be seen and heard unduly.

Since the days when Solomon's fleet first introduced the peacock into Palestine, no bird has had a more wonderful history. He is truly not only the vainest but also unquestionably the most beautiful creature of the feathered kingdom. Indeed it may be said that he reflects the wonder of all the East. Alexander the Great so loved this marvellous child of beauty and mystery that he inflicted

severe punishment upon any one who dared to harm it. The peacock's "plumage scintillates and flashes so as to be inferior in its splendour only to those colours that are kindled into life by the sun, and which are reflected by the bird; while it surpasses all its congeners in the glory of its sheen: the purple robes of the glacier, the silver surface of the stream, the blue mists of the distance, and the deep darkness of heaven's dome above complete the magic picture." Yet even this wonderful child of beauty and grandeur finds it necessary to dance and parade his glory before the feminine sex in order to win a mate!

During the mating season, he seeks the company of several peahens, hoping that out of a number he can win one for a bride. Gracefully and manfully he faces the one of his choice, that he may display his exquisite throat and breast as well as his tail. If she appears unconcerned, he immediately assumes other and varied poses, hoping thereby to impress her with his grandeur. If this does not succeed, he marches for her—a perfect soldier, with the dignity and poise of an army officer. These extraordinary attitudes are continued with occasional light dance steps, until no bird could resist such ardent wooing, and at last he is accepted as a mate.

And so there is among birds a variety of dancing and social pleasures and pastimes as great as we find in the human world. And there is yet much to be learned about their wonderful knowledge of life and its strange ways.

CHAPTER V

FEATHERED ATHLETES

See the . . . bird, who wildly springs,
With a keen sparkle in his glowing eye
And a strong effort in his quivering wings,
Up to the blue vault of the happy sky.

—Norton.

AMONG birds, as in the human world, we find many different forms of athletics. There are games, sports, and various competitive feats of strength, involving skill and endurance. The conditions of their environment largely determine the nature of their athletics. Some birds are all-round athletes and can perform numerous feats with equal skill, while others have but one specialty.

The competitive sports between individuals of the ostrich family is most interesting. With their powerful legs they are able to race as no other bird can. They are the race horses of the feathered kingdom. At an early age, the young ostrich is taught to run races—a practice which prepares him for what he needs later in life in the way of self-

protection through rapid pedestrianism. Many a race is run and honours won by young ostriches on the plains.

Bird racers are plentiful. The bustards and plovers are among the swiftest; the sandpipers and larks the nimblest; while the road runners are the most direct in their methods, and the only ones that indulge in relay races. While these relay races may be the result of fellow-racers suddenly appearing at a certain post, an onlooker would believe them to have been definitely arranged beforehand.

There are many professional divers in the bird world. The depth to which they can descend, and the length of time they can remain under water, depend entirely upon the bird. Like human divers, some can remain under water for several minutes while others can stay under for only a few seconds. Unquestionably, the greatest diver is the eider duck. He not only dives the deepest, but remains under water the longest. These interesting friends of the deep often dive four hundred feet under the surface, and remain there from four to six minutes. The northern diver, on rare occasions, remains under water from eight to ten minutes. These deep-sea divers are running great risks, however, when they remain under water so long, for if they should in any way get entangled

in sea-moss or weeds while returning to the surface, they would die immediately. The Icelanders used to catch ducks by means of baited nets spread over the water.

It is interesting to note the different methods pursued by divers of the bird world in teaching their young the profession. For instance, young penguins are not introduced to the water until they have doffed their first baby suits of down. Then they are led to the water's edge and crudely pushed in. Usually the baby penguin is an expert at the first trial and a second lesson is unnecessary. But if he refuses to swim, and later to dive, the stern mother and father push him under until he gets accustomed to the water.

Numerous water birds have too much plumage to become skilled divers. Being wise, they rarely attempt to dive, even when in great danger. Among such birds may be noted the albatross, swan, gull, phalarope, and many others. The pelican is too much like a balloon to dive successfully —that is, the epidermis of his body is inflated with air cells which make him too light. Each variety of diver has a different kind of movement. A professional swimmer, when he wishes to dive, digs the water simultaneously with both his feet. Occasionally he tumbles over head-first toward the water

before disappearing. Other divers do not make this aerial plunge.

There are quite a few high divers among the birds, and their beauty of form is shown to great advantage in their profession. Among this class of divers may be mentioned the booby, the kingfisher, the osprey, and several varieties of terns. The booby swoops down from a height with such a force that he is often dashed to pieces against the rocks. Fabre has several times mentioned this fact.

Not a few of these high divers after reaching the bottom run around there for a while. The dipper is especially fond of underwater haunts. There he moves along, half-running and half-swimming, searching about this stone and that; then suddenly he arises to the surface and is seen to dart through the foaming spray of water to a beautiful, mist-drained nest. With his wonderful black-and-white body and his elusive habits, he is a water-nymph indeed!

Swimmers and divers of the far north who live among the icebergs, and who secure their food entirely from the water, have devised a wonderful means of diving. The penguin mentioned in the report of the Challenger Expedition is claimed actually to swallow stones when preparing to dive

for food, that it may sink with greater ease. He disgorges them when he returns to the surface. If this is true, it is indeed a most remarkable way of adjusting weight. Surely a wise diver could devise a better scheme for a ballast!

Numerous young divers seem to take to submergence as a means of self-protection. The chicks of the lotus-bird will dive under water at the least disturbance, and sometimes remain under from ten to fifteen minutes. The great-crested grebe not only builds its nest on the water, where it floats around, but gathers the material, such as sea-weed and rush, from the bottom of deep water. How true are the words of Mary Howett when she speaks of this inhabitant of the sea!

> "Amidst the foaming wave thou sat'st
> And steerd'st thy little boat,
> Thy nest of rush and water-reed
> So bravely set afloat."

The chief aim of divers is to get food. It is not uncommon for diving birds to be caught in fish-nets at a great distance under the surface of the water. The shag is especially gifted in diving, while the darters and the great-crested grebe will dive with such rapidity and then swim so fast that they may easily cover two hundred feet in less than half a minute.

This interesting water-nymph, the grebe, wears a wonderfully graceful and imposing head-dress. Both the male and female grebe possess this double-pointed group of feathers on the crown of the head, resembling nothing so much as horns, as the bird darts through the water and like a flash of lightning dives below, searching for food, or hiding from danger. It even sleeps upon the water, preens and oils its feathers, suns itself, and yet manages to remain in the same position. This is done by means of its feet, or paddles, which are constantly working; during a storm they must work extra hard to keep the bird's position.

The land is not suited to the grebe's needs, as its legs are placed so far back on the body that it is forced to walk upright. This is very awkward indeed; but when swimming, the grebe has no rival for poise and dignity: its neck is held in a graceful upright position, and it can dive with no noise and as silently come up again. However, if threatened with danger, it plunges beneath the waves like a frolicking boy in a mill-pond.

Its real hunting ground is at the bottom of the water where small fish and insects are plentiful. It loves solitude, and will rarely remain in the company of even ducks or coots. The most singular fact in the bird's whole life is its strange and

THE GREAT BLUE HERON IS WELL EQUIPPED BY NATURE TO BE AN ATHLETE

THE GREBE HAS NO RIVAL AS A WATER BIRD

inexplicable habit of plucking the feathers from its own body and eating them. Naumann says: "These feathers seem to act with the grebe like sand or small stones do with many other birds, as a necessary aid to digestion."

No movement of a bird seems more wonderful, as far as position is concerned, than flying under water. Of course, water is more difficult for a bird to fly through than air, because of the greater pressure; yet not a few divers and swimmers are masters of this strange art of aquatic-aviation. They might be termed living submarines. These birds have much smaller wings than those of the professional aviators, as large wings would be useless under water. There are many birds, however, who have to fly both under water and in the air. These are handicapped when under water because they have to fly in the denser medium with aerial-propellers.

The most skilled submarine birds, the penguins, are no good at aviation. Their wings are nothing but flat paddles, and suitable only for the water. At first sight, one might think the penguin had no feathers at all on its wings, but such is not the case; while it has no quills, it is covered with scaly-like feathers which are totally unlike all other feathers.

As might be expected, these bird-submarines are extremely awkward on land, and very fish-like in water. Penguins are the water-fairies of the bird kingdom. Mr. Cornish, in speaking of their underwater sports and the silvery appearance of the plumage, caused by the air from the wings, says: "They seem fitted for everlasting flight in the palaces and grottoes of sea-nymphs, across which they fly, bearing bubbles of sunlight from above, scattering them through the chambers like crystal globes of fire." Darting here and there below the surface, leaving a lightning-like trail of air-bubbles behind, the penguin flashes through the water like a comet of the heavens. It seizes and swallows many fish without the slightest hesitation, and when its fishing tour is over it quietly rises to the surface and climbs on to land—the most awkward and clumsy creature imaginable.

New conditions create new habits. The cormorant, according to Herr Gätke, the distinguished ornithologist, has learned how to immerse itself and remain perfectly motionless in a pond of water with only its head above the surface, and from this position attack flying or swimming prey. He claims to have seen the cormorant in this position catch a swallow and eat it. What power it is that enables the cormorant, whose body is many times

lighter than an equal volume of water, to remain thus silently submerged, no one knows. It may be that this athlete has swallowed pebbles like the penguins of the north, or again it may be that the bird has learned some new power of balance which man may discover in the distant future.

The cormorant is only one of the many water-birds whose habits are baffling to the mind of man. These strange people of the water have air-sacs distributed over their bodies and directly connected with their throat and lungs; these air-sacs make their bodies exceedingly light in proportion to their size. In addition, their coats of feathery plumage make them still lighter; as a result, many of them practically float on the very surface of the water.

In the bird world there is a certain amount of competitive sport between different varieties of athletes, though the rivalry is not nearly so prevalent as it is among boys. As in the human world, this competition teaches those qualities so much needed—self-control, obedience, and leadership. It also arouses a spirit of emulation, and brings about a perfection of the physical body as is attained in no other way. Birds need every faculty developed that they may meet and conquer all difficulties in their search for food, in migration, and in war. Incidentally, the general development as the world

progresses in so-called civilisation means more danger to the feathered tribe.

Woodpeckers have many games of rivalry in the realms of professional carpentry and climbing. They can mount the most slippery tree by a series of jumps or springs. They can climb around dead trees or around the smallest sapling in search of food. Their nests are usually burrowed out of the wood of a dead tree. They are the greatest aid to fruit orchards because of the many pestiferous insects they destroy, although few farmers seem to realise it. Nothing is more delightful than the peculiar call of these red-headed carpenters, and their continual "rapping" on dead trees sounds like hundreds of men-carpenters at work on a house.

The green woodpecker is shier than his American cousin. He is the commonest of the European species, and he delights to dwell in the depths of woods and forests. His chief food is insects and worms, and his tongue is peculiarly shaped so that he is enabled to shoot it out to an astonishing length in seizing the insect or worm on which he feeds. He utters a piercing cry with which he makes the forest resound. He has another cry, which is heard only occasionally, like a noisy burst of laughter, and this he repeats twenty to thirty times in rapid succession. He has still another

plaintive note which is heard usually preceding a storm, and is called his weather-prophet note. But the sound for which he is most famed is his loud rapping on dead trees. And this he does very often to drive insects from their homes under the bark. In the following lines to the woodpecker, the poet gives us a true picture of him:

"Hail to thee, woodpecker, clothed in green!
How thy verdant mantle concealeth thee;
'Mid the waving foliage scarcely seen,
As thou climbest the boughs of the forest-tree.
The theme of the villager's song art thou,
The woodpecker tapping the hollow beech-tree."

In South America there are three varieties of birds which use their wings for other purposes than flying. The penguin uses his wings as a fish uses his fins, and may be termed the fish of the bird world; the ostrich uses his wings as sails, and is the ship of the bird-world; while the loggerhead duck, which was formerly known as the race-horse of the water because of his unusual manner of running and splashing along, is now called by the more appropriate name of steamer.

The wings of these steamers are very unusual, and while they are not large enough or strong enough to permit of much flight, yet they serve by splashing and flopping the water to evolve great

speed. The strange noise produced by the flopping of a number of these loggerhead ducks is very weird.

Among the curious sports of the bird world, none is more striking than that of the professional jockeys. These jockeys are many in number and their beasts of burden are equally numerous. One of the best known of this profession is the rosy bee-eater of East Africa. Mr. Arthur Neumann describes him as continually riding about "on the back of the large-crested bustard or 'pauw' which is common about the northern extremity of Bassu. It sits far back on the rump of its mount, as a boy rides a donkey. The pauw does not seem to resent this liberty, but stalks majestically along, while its brilliantly clad little jockey keeps a lookout, sitting sideways, and now and again flies up after an insect it has espied, returning again after the chase to 'its camel' as Juma (his native servant) not inaptly called it. . . . I have also noticed this pretty little bird sitting on the backs of goats, sheep, and antelopes, but the pauw seems its favourite steed. I imagine it gets more flights in this way at game put up by its bearer, which also affords it a point of vantage whence to sight and pursue its prey in a country where suitable sticks to perch on are few."

Another most interesting species of jockey is the oxpecker or rhinoceros-bird, a native of South Africa, and supposed to belong to the Starling family. This jockey prefers to ride on big game, such as cattle or rhinoceroses; and his delight is not so much in riding as in the insects he finds on the animals' backs. Recently, however, this once useful jockey has become a great nuisance, and has fallen into disgrace, since he has learned to love not only ticks but blood. He now attacks the cattle and horses wherever he finds them, and persecutes them terribly. While the thick hide of the rhinoceros is proof against the strong beaks of these jockey-birds, those of the more delicate-skinned domesticated animals is thin and easily pricked.

In America and England the starlings and blackbirds do the jockey work. In East Africa the egrets swarm on to the elephants to pick off the ticks. The animals seem to enjoy the presence of their faithful bird friends and riders. In the early days of American history, herds of buffalo were followed by blackbirds and cow-birds, and old hunters claim that these animals were never disturbed as long as birds were on their backs. It seems that the birds left the animals only in time of

danger, thus acting as sentinels for their beasts of burden.

A unique branch of professional sport in the bird world is fighting. The pugilistic tendencies run through the entire bird kingdom, and are especially marked among birds of prey. These quarrelsome creatures fight their battles in the air, and the aggressive warrior soars above his adversary and dashes down upon him with terrific force. If the lower bird is sufficiently skilled in duelling, he turns so instantaneously that his enemy misses him and darts past; if there is no chance to escape, he often turns over and grasps his assailant, and together they fall to the ground. This form of defence is common among kites.

Game birds are the greatest warriors. They are especially pugnacious during the mating season. At this time they are constantly on the lookout for a rival, and are ever challenging a duel. Every one who has raised game chickens knows the warlike propensities of these birds. When two cocks meet, a battle always follows and not until one of the combatants is wounded or killed does the combat stop. The conquered bird is forced to leave the community, and if he has a harem of followers they either go with him or become reconciled to his conqueror.

Cock pheasants will allow no rivals on their grounds; each has his own drive, and when a rival appears a battle follows and the victor is left in possession of the run.

Terrible conquests are waged by the various species of the grouse. If the female has two or three suitors, a rough-and-tumble battle ensues while she runs about the battle-ground watching its progress with interest. These fights have been known to last for two or three hours, and not until the ground is covered with feathers, and one of the warriors killed, do they cease.

Sometimes strategy is resorted to in winning a battle, as in the case of Reinhardt's ptarmigan, who lures his enemy away from the female bird, and then suddenly rushes back to her. They disappear together; or if she refuses to flee with him, the battle with his opponent is vigorously renewed, and fought to a finish, with a bride as a reward.

The weapons used by pugilistic birds are as numerous as they are varied. There are claws, beaks, spurs, and slugs, in the form of feet, which are very formidable. The cassowary can leap and kick with almost the force of a colt. Numerous eagles have such terrible claws that they can swoop down upon a young goat or lamb and almost instantly kill it, or pick up the young of deer and fly

away with them. It is claimed that the harpy eagle is able to tear a rabbit into pieces with its powerful claws. Swans, geese, and ducks use their wings as weapons of defence. If disturbed while incubating, swans are dangerous, and they are able to use their wings with great power in fighting. Geese can whip most dogs with their wings, while ducks are only able to drive away smaller animals, and chickens. Some birds have knobs on the end of their wings which they use as fists.

Spurs are perhaps the most dangerous and deadly weapons used by fighters, with the exception of talons. They are used by the pheasant family, and reach their greatest perfection in the jungle-fowl. This interesting inhabitant of India is the ancestor of our domestic fowl of to-day; the old Greeks referred to it as "the bird." When it was first tamed, no one knows, but it is certain that it dates back to a very early age, for the first known authors make frequent mention of it as "the cock."

Many of our present-day game-cocks have enormous spurs. These weapons are bony, very sharp-pointed sheaths which look like miniature antelope or goat horns. They are located on the back of the ankle and are really specially developed claws. The number of spurs possessed by a single bird depends upon its variety and kind. The

double-spurred peacock has, as his name implies, two on each leg; other birds have three, and the blood-pheasant has sometimes as many as five. Cock-fighters of the human world have cruelly learned how to plant a spur in a game-cock's head in such a way that it will grow, and curve directly over the bird's eyes. In this case, it serves to dig out the eyes of his opponent in battle. Again, sharp steel spurs are often buckled on a rooster's feet, and serve to slice open his enemy. This form of heathenish sport is fast disappearing, even in Mexico, where it has been the twin-sport of bull-fighting for many years.

Spurs ordinarily are developed only among the male of a species, as they are the champions of tribe rights and must defend the females. However, this is not always the case: sometimes, as in the case of the Indian spur-fowl, the female has spurs. The French partridge has a knob in place of a spur, and guinea fowls have the same defensive weapons.

Many fighters prefer to use their beaks as weapons of defence. Among these may be mentioned redbirds, blackbirds, crows, starlings, finches, blue-jays, and numerous others of the small tribes. While the beak is the chief weapon, each bird also uses his wings to buffet the enemy,

and his feet to balance him on the ground or in the tree, unless the battle is in mid-air.

Most fights of the bird world take place on the courting grounds, and in the mating season. As in the human world, the male usually does the courting; but this is not always true, even among birds. Among the bustard-quails—small birds, about the size of a common English sparrow, natives of Africa and Asia—are found such strange and unusual customs that we quote the words of Mr. A. O. Hume, perhaps the best authority on Indian birds: "The most remarkable point in the life history of these bustard-quails is the extraordinary fashion in which amongst them the position of the sexes is reversed. The females are the larger and handsomer birds. The females only, call; the females only, fight. Natives say that they fight for the males, and probably this is true. What is certain is that, whereas in the case of almost all the other game-birds, it is the males alone that can be caught in spring cages, etc., to which they are attracted by the calls of other males, and to which they come with a view to fighting, in this species no males will ever come to a cage baited with a male, whereas every female within hearing rushes to a cage in which a female is confined, and if allowed to meet during the breeding season, any

two females will fight until one or the other is dead, or nearly so.

"The males, and the males only, as we have now proved in numberless cases, sit upon the eggs, the females meanwhile larking about, calling and fighting, without any care for their obedient mates; and lastly, the males, and the males only, I believe, tend and are to be flushed along with the young brood. . . . Almost throughout the higher sections of the animal kingdom, you have the males fighting for the females, the females caring for the young; here in one insignificant little group of tiny birds, you have the ladies fighting duels to preserve . . . their husbands, and the latter sitting meekly in the nursery and tending the young." The reason for these strange masculine tendencies of the females is unknown to naturalists. Perhaps at some distant date we will understand why the female must rule among the bustard-quails.

CHAPTER VI

PROFESSIONAL MUSICIANS

'Tis always morning somewhere; and above
The awakening continents, from shore to shore,
Somewhere the birds are singing evermore.
—Longfellow.

OF all the brilliant endowments of birds, there is none so much appreciated by man as their wonderful art of music. The song birds are the poets of the feathered tribe; they are the bards and troubadours of the world, for their songs are suited to the passing moods and occasions, and are determined thereby. The songs of the birds, being improvised to express the peculiar emotion of the moment, possess a spontaneity that human musicians often strive in vain to acquire.

The formal songs of man, perfect in art as many of them are, still lack that charm that nature brings—a wonderful essence of spiritual effect. For, to express all that the heart feels, to exhaust the possibilities of a thought or emotion, to leave nothing to the imagination of the hearer, is to of-

fend by excess of ardour. This is often the error of man-made music; it is certainly the tendency of every over-developed art. The rich, full strains of a wild bird's song has in its unstudied form nothing of the laboured and unnatural. It is a song from the heart, and to be really appreciated it must be listened to only by the heart.

There is reason to believe that the songs of birds are often, if not always, heard with a certain emotional understanding and sympathy by mankind that all his complex science and philosophy cannot explain. It is that mysterious sense of kinship that exists between all mortal beings, that may for long intervals be hidden by the passions and desires, but responds to the holy strains of nature's music from the throats of song birds.

The poets of all races and of all times have sung the praises of our feathered brother-musicians; and in their kindred art they have caught something of that charm that is peculiar only to the singers of the air. In his famous poem, *To a Skylark,* Shelley has probably been most successful in the communion of spirit between bird and man. He feels the matchless eloquence of the song bird:

"Chorus hymeneal,
Or triumphal chaunt,
Matched with thine, would be all

But an empty vaunt,
A thing wherein we feel
There is some hidden want."

Not all the poets of antiquity, nor any of his illustrious contemporaries, to his mind possessed musical powers equal or comparable to the wild bird, with its "profuse strains of unpremeditated art."

To us who are accustomed to the songs of birds in every woodland the thought perhaps never presented itself: What a dreary world it would be without the music of the birds! The city park, the suburban wood and grove, would be desolate indeed, without the song of a single bird. The deep primeval forest, with its weird and gloomy shades, would be like a place of horror and magic without the chorus of a thousand happy birds to proclaim in many keys the joys of life. Were they not there, only the unaccompanied chanting of the brook, and the whisper of the winds in the tree-tops, and the occasional scream of a beast of prey would greet the ear. There would seem a deathlike stillness in spite of the other sounds. A forest without birds would be a vast dark mausoleum, silent and forbidding, though splendid. They are a necessary part of nature's domain; and a sylvan retreat, decked as

A MOTHER QUAIL ON GUARD OVER HER NEST

A BLACK-BILLED CUCKOO AND TWO YELLOW-BILLED CUCKOOS IN A YELLOW-BILL'S NEST

it may be with all the advantages of man-made art, is incomplete without the songs of birds.

They are an important part of the world in which they live, not only for their esthetic endowments, but for the many services they perform. No land could be long inhabited and cultivated successfully were it entirely barren of birds. They serve nature and promote, by their activities, the ends of life, and in song give praise to the joys of living. The bright religion of healthy-mindedness is their great contribution to the world, by example and by the joy they bring in their music.

The gift of song varies as widely in birds as it does in human beings; each species has its range of voice and definite compass, and each sings its own individual notes in its own peculiar manner. A number of birds have melodies which their tribe has agreed is "their" song, and they sing it only; while others, like the mocking-bird, canary, bullfinch, etc., learn to sing many songs of varied lengths and significance.

Environment undoubtedly has great influence upon the musical talent and accomplishments of birds, just as among human beings. Especially is this true of their musical environment, for birds not only possess instruments upon which to perform, but a rare talent and adaptability for learning

beautiful sounds and notes to weave into their productions. This is most easily observed in caged birds, for a young canary raised near a mocking-bird will have many notes uncommon among his tribe.

This fact has been turned to advantage by bird-fanciers the world over, and young birds are given especial advantages in order to improve their musical ear and technique. The finest singers are procured, and these are kept near the young birds. As the latter develop their own voices they try to join in the melody of their teachers, and after long effort succeed in learning their methods and execution, and often acquire a certain similarity in quality of tone. In this way the musical standard of caged birds is being steadily improved. It is nothing more than a system of music schools and instruction, made possible by the native talent of the bird mind.

In the wild wood every bird has a certain amount of instruction given him by his parents, and his early environment completes his musical education. Like a musician in the human world, he learns all his teachers can give him, and then goes forth to add to his skill by practice and observation of others.

There is no doubt that scenery has an effect upon

the songs of birds, and each locality has its particular type of music. The mocking-bird of Florida, for instance, sings in quite a different way from his Texas brother, although both are musicians of great talent, and neither might be said to be inferior to the other in either quality of note or execution.

Birds sing their loudest and sweetest during the mating season. Every bird must have some special art to rely on in his love-making, and music is used more than any other resource. The true bird-musician pours out his heart in passionate melody to the object of his adoration, and any sign of favour from her brings forth still greater efforts.

The most fascinating feature of bird-song is the mimicry so common to many bird musicians. Among the mimics who are professional vocalists the mocking-bird has the first place. He mimics every sound imaginable, from that of running water to the most difficult and complicated notes of the flute. In many cases he improves upon the sound he imitates. A mocking-bird can sing the cardinal's song far better than the cardinal can sing it, and give the alarm cry of the sparrow with more effect than its originator.

Some mimics appear to repeat the notes of other birds merely to increase their own songs; others,

however, like the starling, blue-jay, and sedge warbler, seem to carefully follow the vocalisation of other birds only for the purpose of exact mimicry. The mocking-bird, skylark, thrush, and robin are all capable of marvellous mimetric reproductions in their singing, a habit which imparts to their performances a richness and variety of expression that is second only to our own imitative type of music.

In captivity a bird seems to increase its powers of mimicry. This may be due to the fact that there is less to attract its attention, and mimicry becomes a pleasant way to while away the hours; or it may be only man's delusion, since only in captivity can we observe birds for long periods of time and at every hour of the day. The talent of mimicry varies in individuals and species just as the production of song itself is not constant even in a single family of birds.

This fact is well demonstrated in the case of canaries. In one nest eight young canaries were raised from two parent birds, and no two of the offspring were similar in markings, habits, or disposition; and in powers of song and mimicry each had his own style and taste. One mingled together parts of his father's song with notes from the mocking-bird nearby; another chose to borrow

from the song of the cardinal; a third followed the thrush as a master; and each one is a singer of remarkable skill and value.

The mocking-bird of the United States is the king of all songsters. He is one of the greatest attractions of the Southland, where during the spring and summer the very atmosphere is filled with his exuberant music. His voice seems to be the voice of orange blossoms, magnolias, and sweet-smelling honeysuckles and roses; and among them he sings joyously day and night. No description of this wonderful musician can convey any idea of his song. One might as well attempt to describe a Tetrazinni solo or an Albert Spaulding recital, as to try to give any impression of the marvellous beauty and charm of the mocking-bird's renditions.

The mocking-bird seems to take little time for rest during the spring and summer, for he sings and works all day, and sings and plays nearly all night. He is so filled with joy that he leaps and tumbles in the air as he sings, like a clown in an opera. Apparently he is greatly influenced by the bright moonlight, as he performs his most astonishing feats of tumbling and singing then.

He takes special delight in imitating every sound he hears, and in fooling people and animals nearby; but, unlike the chat, he does it openly. He

boldly attempts to imitate the whistle of the neighbour's boy, or the noisy chatter of the angry blue-jays. And then suddenly he begins a melody of such wild and barbaric feeling that all the primal emotions of the human race seem to be recorded, and finally he ends with a song that has the charm of a Chopin Nocturne. There is an emotional power in the mocker's night song which is indescribable in musical terminology. One cannot describe the motives, phrases and periods in telling of the weird and eerie cascade notes of this chief of songsters.

No bird is so famed for its singing as the nightingale, and all the praise it has received is well merited. Poets of all ages have paid tuneful tribute to its art, for no one can deny its right to a prominent place among the world's greatest song birds. There is an exquisite sweetness in its tones so remarkably appealing that it has led many persons into the error of calling the nightingale melancholy, when the contrary is really true. Exultation is evident in the quality of its song, and its rendition betrays no sign of gloom. The nightingale is possessed of wonderful execution and interpretative skill. Besides the "full-throated ease" and excellence of its song, it has a most splendid use of the crescendo, which it deftly employs on a

single note with an artistic perfection that rivals the highest human skill.

The music of the nightingale has become one of the staple subjects in European literature, and this recognition of its art is most befitting. For considering the long time that this bird has been a neighbour to man, it has surely given more joy to the world than any other bird musician. The sweet song of the nightingale has contributed largely toward awakening in the heart of man that sympathy with wild things that harm him not, which is the bright jewel of the present age.

The song of the thrush possesses a charm peculiar to itself, having a vigour and clearness which add to its great variety of tone. At morning and evening his clear joyous notes may be heard in a great rush of triumphant melody—a veritable torrent of song. The thrush also possesses the power of mimicry, and his art profits by his borrowing the calls and notes of his bird-neighbours. One observer declares that thirty different birds contributed to the repertoire of a certain thrush, and of these sounds, twenty were exactly reproduced.

By this adaptability the little brown musician, like many human composers, takes the material that is at hand and weaves its song, aided in his expression by its variety. The chiff-chaff, the wood-

warbler, the wryneck, the butcher-bird, the nuthatch, the goldfinch, chaffinch, and even the nightingale, have all furnished him with notes, bars, and cadences.

The great thrush family gives us three musicians of extraordinary ability: the wood thrush, the veery, and the hermit thrush. They differ from each other in song, and from all other birds in many ways. With them habitat—environment—also causes variations, as with other birds and with man.

The songs of these birds are held dear by those who hear them in their native haunts. Lynn Tew Sprague says: "There is absolutely no tone in nature—no human voice, no vibration of string, or wood, or metal—to compare in mellow richness and sonority with the thrush's note. . . . 'Tonal quality' is a phrase we use, but when listening to one of these birds we are for the first time aware of the full difference in the mystical merging of those ghostly groups of subconscious harmonies, which science tells us accompany every tone, so that each note is really a harmony. The voices of these three birds resemble each other in quality, yet each possesses a subtle tonal colour and their songs are different in pitch and measure . . . the bewildering cadenzas of the veery, the serene largo of the wood thrush, the more joyous adagio of the hermit

are to certain natures the consummation of song."

Further than this it is difficult to describe the music of the thrush. Thoreau pays a delightful tribute to the wood thrush, and a poetic description of its song: "Some birds are poets and sing all summer. I am reminded of this while we rest in the shade and listen to a wood thrush now, just before sunset. . . . The wood thrush's is no opera music. It is not so much the composition as the strain, the tone, that interests us—cool bars of melody from the atmosphere of everlasting morning and evening. It is the quality of the sound, not the sequence. In the pewee's note there is some sultriness, but in the thrush's, though heard at noon, there is the liquid coolness of things drawn from the bottom of springs. The thrush's alone declares the immortal wealth and vigour that is in the forest. Here is a bird in whose strain the story is told. Whenever a man hears it, he is young and nature is in her spring; whenever he hears it, there is a new world and one country, and the gates of heaven are not shut against him."

The skylark is a favourite songster of Europe, and many poets have sung his praises. He is especially loved for the bright philosophy which he teaches. Every morning as the sun rises he springs, singing exultantly, from his nest on the

ground and, soaring and singing, mounts higher and higher to greet the day with joyous melody.

In the warbler family are many singers, and in some respects they resemble each other in their music. The sedge-warbler, however, is the chief among them. His great power is mimicry, and there is hardly any limit to the sounds he can reproduce. His song is a medley of many and varying strains; and in the hush of twilight he seems like a tiny elfin troubadour recounting the deeds of the day. Composed of many tones in rapid succession, with changing lights and shades and cadences, the song seems so well developed that one might suspect the little musician of arranging the material beforehand.

The starling is called by some a songster, and if effort entitles him to consideration, he is a deserving musician. Being a most talented mimic he offers as a song all his repertoire of sounds in the best way he can, interspersing them with chirps and whistlings. Perhaps in time he will become a master musician, for he seems a songster in the making.

In the multitude of nature's choristers there are many singers of rare merit and ability, but space will not allow even an enumeration of them here. The flute-like notes of the blackbird, the whistling

song of the cardinal, the lively music of the robin, the silvery song of the tree-pipit, the gentle cooing of the dove—these and a thousand other less familiar melodies combine to give music to the woods and fields and all who dwell therein.

Not only do birds sing with great artistic ability, and display exceptional talent in learning from others, but many of them are equipped by nature with instruments which correspond to those of a man-made orchestra. They have wind and percussion instruments, and we are forced to admit that they knew and used these two principles of sound production before man became aware of them.

Many species of cranes and swans possess a peculiarity that is most interesting. The famous trumpeter swan is the best known of this group, and his name is quite appropriate. The male birds have wind-pipes of great length coiled in a long pocket next to the keel of their breast-bones, and these make a remarkable difference in their voices. It gives them a resonance that is most pleasing; they are playing on the French horns that nature gave them.

This elongated wind-pipe is not confined to these birds only, but certain species of the passerine birds, cousins to the bird of paradise, curassows, geese, anseranas, and painted snipes, also possess

this sounding-box in their throats. In the latter case, however, unlike the former group, the extra coils of the wind-pipe are stored near the skin of the breast, and with no protective layer of breast muscles as one might be led to expect.

The emu in both sexes has a wind-pipe equipped with an air pouch which makes it possible to give forth a rolling sound like a very large drum. There is a hole in the outer wall of the wind-pipe which allows the inner wall to protrude when filled with air, forming itself into a sac for resonance, which somehow enables the bird to make its drumming sound. The ostrich roars so much like a lion that even the Hottentots are often deceived by it.

The drumming sound is more or less common among the denizens of the wild wood. The woodpeckers peck tattoos in many keys upon the branches, and if the tree is dead, the sound is not unlike a small kettle-drum. The ruffled grouse, and others among the pheasant family, are drummers of great skill. Indeed they employ this means for signalling at a distance just as soldiers have done for a long time. One is led to wondering if man did not get the use of the drum from observing the sound among birds. These feathered drummers make the noise by striking their wings against their bodies in such a way as to catch a

little air under them, the principle being the same as in clapping the hands.

Both sexes of the common snipe and other species make a "drumming" or "bleating" sound at certain seasons that is very unusual. From a great height these birds suddenly descend with increased speed and expanded tail. The outer feathers of the tail are held at right angles to the body, and being strong and peculiarly curved, with a wider web for resisting the air, a sound like that of a drum beaten lightly and with marvellous rapidity is produced.

Manakins of South America make music in a mysterious way while on the wing. One of them, the black penelope of Guatemala, has been often observed in this feat. While flying he suddenly plunges toward the earth with outspread wings, and during this descent the peculiar crashing sound is heard. It is somehow produced by the strange formation of the quills, but the manner is not exactly known.

The white stork is possessed of a castanet in its bill. By throwing its head far back till its beak almost touches its back, the jaws are made to rattle rapidly. This can be continued as the bird slowly brings its head up in a half-circle and down to the ground. Often a number of these stately

musicians join in a regular beat that is very pleasant to hear.

The bell-bird of Brazil, also called the naked-throated cotinga, makes a most wonderful music, suggestive of cathedral chimes. When its notes are repeated slowly they have a bell-like quality that is marvellous to hear; in quick succession they sound like the ringing blows of a hammer on an anvil. This peculiarity has won for him the name of ferreiro, or smith, among the Portuguese.

This strange bird seems to guess the power of his music, and with the feeling of a true artist he delights in choosing befitting occasions for his most impressive performances. Often he perches on a high bare tree, above gun-shot range, and ruffling his beautiful white plumage he sends his church-like notes resounding over hill and dale. There is scant wonder that many legends have grown up among the aborigines about him.

All bird musicians seem to feel the artistic fitness of their music to the surroundings, the season, and the weather, and with astonishing fidelity tone it to the prevailing shade. The cardinal sings a pensive song at twilight, the robin gives a few notes of meditative quality for his good-night song in the hush of evening, the skylark springs up singing to meet the first bright rays of the rising

sun. The poet who said, "I would be one with nature," recognised the real source of inspiration. And birds, being themselves in form and voice the essence of nature's joy and beauty, are possessed of that highest contact with the fountain of music and poetry, and all other esthetic aspirations. They are in body a part of nature, and their voices are in tune with nature's manifold harmonies. Their music is the expression of landscape, sky, and season, and all the emotions of man and bird that are affected by them.

Birds possess that same desire for self-expression that has led man to music and other arts. The unheard music of the soul is striving for form and expression in the arts of man, and it is equally true of birds. In the depths of their little beings they conceive beautiful structures of sound and form and colour at least worthy to be classed with the dreams of human esthetes.

In music they develop in their throats or wings the instruments of their art, and acquire their skill by practice and continual study. Like true musicians they learn from every source, and blend all sounds that please them into songs of ravishing beauty and sweetness. To their gifted ears there is a beauty in every sound, and in reproducing it they eliminate the elements of discord, and make

their songs the pure distilled sweetness of nature's many voices. Their productions are sonatas of the wild wood.

It is strange indeed that so few human beings are yet aware of the divine psalmistry of the birds. We pay large sums to hear concert music, and we never stop to think that the pieces are only the musician's ideal of some aspect of nature. In his complex civilisation man has grown away from accord with the world of wild things, and he cannot give its essence so truly as his feathered brother of the air. Birds render in their music the glorious spirit of the universe as it really is, and will ever be.

The indifference of a large part of the human race to the natural beauty that is everywhere reminds one of Stevenson's apt words: "If God would charge so much a head for sunsets, or send a drum around at the blossoming of the hawthorns, perhaps then man would better appreciate and adore what has been his neglected heritage since first his race began."

Appreciation in the sense of public recognition is largely a matter of education, and it is most gratifying to note the present wonderful advance in the appreciation of the beauties of nature. And with our better understanding of the tiny intellects of

THE GREAT AUK, ONE OF THE EXTINCT GIANT ROAD-MAKERS

THE RESTORATION OF A DODO BIRD (AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK)

our bird neighbours will come a warmer sympathy and a deeper and truer love of them and their accomplishments. When the soul enters into our relations with our fellow mortals of other species there comes an esthetic insight into their lives, emotions and thought processes that cold science can never attain. And from the present bright outlook let us hope that that happy time may some day come, when man will no longer search for beauty far away and overlook the marvels that surround him and strive for his appreciation.

CHAPTER VII

GIANT ROAD-MAKERS

. . . Where fly
The happy birds, that change their sky
To build and brood; that live their lives
From land to land. . . .

—Tennyson.

BIRDS have for unknown ages been the makers and builders of roads through forests, over mountains, around dangerous hunting grounds, and to places of shelter and water holes. They seem to demand absolute respect and legal recognition for distinct boundaries and roads which are so necessary in their civilisation. They unite for purposes of policing and defending their rights against intruders and enemies; and when an enemy is encountered on their runs a desperate battle ensues for the right of way, and to the victor remains the privilege of travelling unmolested on the highway.

All birds travel in some way, and those that cannot fly must walk, and walking implies roads. Strangely enough the big birds are invariably road-

makers. There has been an epoch of big birds just as of big mollusks, reptiles, mammalian mammoths and mastodons. And the greatest accomplishment of these feathered giants was their skill and knowledge of road-making.

There are only a few of the large birds left today, and they are the ostriches, chiefly of Africa and Arabia; the rheas of South America; the cassowaries of Papau and North Australia; and the emus of Australia. All the larger birds are but solitary survivors of a mighty concourse of feathered giants which once covered almost the entire earth. Some members of these extinct species were as much larger than the ostrich as the ostrich now exceeds the rhea in size.

The ostriches are the largest of existing birds. They might be aptly termed the giants of the bird kingdom in its present state. It is not uncommon to find a full-grown individual eight feet in height and weighing three hundred pounds. These strange giants have several marked characteristics, and chief among these is the fact that they alone have but two toes. Their heads are relatively small, and their necks are strikingly long; while their wings are small and covered with soft plumes.

Probably because of their habitat and marvellous endurance, ostriches are associated with the

camel, and it is not an inept comparison. They are the best known and most powerful denizens of the desert, and they possess many remarkable features to aid them in their environment. Ostriches have appealed to the imagination since the very earliest times. This fact is borne out not only by monuments and inscriptions but by the works of Aristotle, Pliny, and Xenophon, as well as by the scriptures.

Pliny, as did Aristotle, believed that the bird was part bird and part quadruped. He says: "This bird exceeds in height a man sitting on horseback, can surpass him in swiftness, as wings have been given it to aid it in running; in other respects ostriches cannot be considered as birds, and do not raise themselves from the ground. They have cloven talons, very similar to the hoof of the stag; with these they fight, and they also employ them for seizing stones for the purpose of throwing at those who pursue them."

Giant birds, without exception, both living and extinct, are incapable of flight, and they have not that strong bridge-like keel which is found on the breast-bone of a goose, and which is so essential as a support for the powerful muscles of the wings. Whether this incapacity for flight has always been true of the giant birds, or whether it has come about

by disuse, is a question which has long been debated, and which is still undecided. It must be remembered, however, that all birds unable to fly are not classed with the giant birds; nor are all flying birds excluded.

We have, for example, a huge pigeon, the dodo, now extinct, on the Island of Mauritius, which evidently lost the power of flight. The deposits of New Zealand also reveal the remains of a large goose and rail that have perished in the same way. Before these birds became extinct they lost the power of flight. They differed in many ways from the giant birds. Pycraft in speaking of the dodo said: "This combination of great stature with flightlessness was the outcome of an abundance of food, and the freedom from all necessity of procuring this food by flight, or by resorting to the use of the wings for the purpose of avoiding enemies. The atrophy of wing had proceeded so far when man entered into this paradise that it had become so reduced as to be inferior in size to that of our common rock pigeon. Thus pinioned, it was at the mercy of the invader; who, however, accomplished the work of destruction unwittingly, and this by the introduction of pigs which devoured the eggs and young." Thus we are reminded by Belloc of the sad fate of the dodo:

"The dodo used to walk around,
And take the sun and air.
The sun yet warms his native ground—
The dodo is not there!

That voice which used to squawk and squeak
Is now forever dumb—
Yet you may see his bones and beak
All in the Mu-se-um."

Judging from the general structure of their leg bones, their shape, size and formation, most of the giant birds were great walkers and road-makers. Perhaps the most important of the extinct giants brought to the attention of the scientific world were the moas of New Zealand. When the Europeans first occupied this country, over half a century ago, they found there great numbers of bones of gigantic birds strewn over the plains, buried in the river beds, lakes, and swamps, and in the caves.

In the swamps near Canterbury, especially Glenmark, these bones were plentiful. In caves there have been found a number of moa skeletons with the skin and feathers still adhering to them. The Maoris well know that these bones and feathers belong to gigantic birds, yet it is possible that their ancestors never saw them. The best scholars believe that these unfortunate birds were killed by

the race that inhabited New Zealand before the Maoris. There is no question about the fact that the moas existed up until a very late era. Even the big roads made by them on the sides of the hills remained intact until a few years ago. Some scholars go so far as to assert that these helpless road-makers were very intelligent, and stationed sentinels at certain crossroads to warn all bird travellers of the blood-thirsty enemies.

It is interesting to know that at the time the dodo thrived in the Island of Mauritius, the neighbouring Island of Rodriguez had as one of its inhabitants a big pigeon known as the solitaire, somewhat similar to the dodo.

In Samoa, in the South Pacific, lives a toothed pigeon which is but a dodo on a miniature scale. This wise little bird has been forced to keep up his flight of recent years by the ever-presence of enemies. Previous to the introduction into the archipelago of rats and mice, which threatened the bird's very existence by eating its eggs, the solitaire spent most of its life on the ground. But since the arrival of rats and man, this bird dwells in the high tree-tops, and it will avoid the unhappy fate of the dodo, by thus changing its modes of life to fit the new conditions, and to annul the new dangers.

A race of gigantic birds can thrive and multiply

only in the absence of big terrestrial competitors, mammalian or reptilian. They must also have plenty of land to roam over, especially isolated lands, which have no connection with big continents. The largest birds—which rank in size with the largest animals—have only been developed in two such places: the moa of New Zealand, and the strange, oddly shaped elephant-bird (*Aepyornis maximus,* signifying "the bird as big as a mountain") in the island forests of Madagascar.

The first discovery of the elephant-bird is most interesting. Only a few years after the discovery of the moas in New Zealand some natives from the interior of Mauritius, for the purpose of buying rum, brought several large vessels. These were nothing more than enormous egg-shells. They were soon sent to Paris by naturalists and attracted widespread attention, and, as Stejneger says, "brought to mind the old story of the famous Venetian traveller, Marco Polo, who located the ruc or roc, the giant bird of Arabian tales, upon Madagascar." In a short time Professor Bianconi tried to prove that Polo might have heard of these enormous eggs, and the birds that laid them. It is little wonder that every one was astonished at the size of them! They had a capacity of two gallons, and

measured three feet in their larger circumference and two and a half feet in girth.

The natives of Madagascar believe that some of these elephant-birds are still living in the interior of the island. However, it is almost a certainty that none have existed there for more than two hundred years. No one knows how they were exterminated, but it is most probable that it was by the hand of man.

The elephant-birds were road-makers, and usually lived inland, but made roads or runs to the coast country during the breeding season. The noted explorer, Mr. J. T. Last, says: "During all my explorations, though I have found the bird's bones a long way inland, I have never seen any fragments of eggs either with them or inland anywhere. Everywhere along the south and south-west coast fragments are to be found in abundance, especially on the hillsides about St. Augustin's Bay. Bushels of broken egg-shell could be gathered in this district with but little trouble. From this I judge that the birds used to live generally in the more inland parts of south-central Madagascar and at certain seasons came to the coast to lay their eggs, after which they betook themselves again to their inland homes."

Perhaps the nearest allies of the moas are the

kiwis, or wingless birds of New Zealand. They have compact, rounded bodies, with small heads, short necks, and long slender bills, slightly curved, with slit-like nostrils near the end. These are the only birds known to have nostrils. Their toes have long, strong claws, while their plumage is hair-like. And while they have no externally visible wings, yet underneath the skin are rudimentary wing-bones. Their tails are concealed and there are no tailfeathers. They are nocturnal in their habits, and when disturbed they grunt almost like pigs. Their powerful legs and feet are used for kicking, and woe unto him who disturbs their nests. Their eggs are enormously large for the size of the birds.

Turkeys have been famed for their knowledge of roads since the time of Montezuma, the haughty, dignified, nature-loving monarch of the Aztecs, who possessed one of the largest wild zoological gardens known to history. Here he had representatives of practically all the animals and birds of the country over which he ruled; there were also many birds brought from other parts of the world to his "Noah's Garden." Among these were all known varieties of turkeys; the Mexican wild turkey being his favourite.

While the turkey is not wingless, and cannot compare in size to the giants of many species of

birds now extinct or nearly so, it is still the largest and most powerful bird of North America, and has a right to consideration for this reason. It is the ancestor of our common tame turkey, having been domesticated for many ages; in fact, it had this name given to it in England as far back as 1541, when it was supposed to have been brought from Turkey. At the period of the Spanish conquest, the turkey was the commonest bird of Mexico. It was introduced into Europe either from Spain or from the West Indies.

It is due to their human-like instinct of roadmaking, and their respect for territory that the common wild turkeys are still plentiful in some parts of America. And no human mother has greater affection for her babies than does this bird of the wild woods and the prairies. From the moment they have hatched from the eggs, the fond mother tenderly watches over them and feeds and warns them. As soon as they become strong enough to wander through the grass and over the prairies, she begins to make little roads or runs to aid them in their travels. Their tiny little red feet must not be pricked by briars and sand-spurs, so Mother Turkey picks away all harmful stickers and forms a little road from her nesting place to the nearest stream of water. When the mother bird with her

young brood goes forth in search of food, which usually consists of divers kinds of insects, berries, and the seeds of grasses, she often depends upon a sentinel to give the alarm in case of danger. At such a time the little ones either flop to the ground where they lie motionless as dead twigs, or else scamper back down the road as fast as their tiny legs can carry them until they reach the home bush, where they crouch to await the outcome of the danger.

During their entire chickhood, the mother turkey leads her flock, usually from ten to fourteen in number, through pleasant fields, over hills, down to the little running streams, up through briar patches, but all the travelling is done—at least the most dangerous spots—over Mrs. Turkey's own roads, and with sentinels ever on the lookout for enemies. At the close of summer, many families of turkeys come together, and form one immense flock. These gipsy-like wanderers travel over vast areas of forest and prairie in search of food. It is to be hoped that gunners and trappers will not utterly destroy these wonderful creatures of the wild woods.

Unless disturbed or driven from their old homes, these wild birds always assemble in large groups and travel to a new hunting-ground by means of

the same old roads they have travelled in previous years, and later they return along the same road. They have frequently been observed to cross rivers at the same place season after season. Nothing but great destruction of their numbers will cause them to change their roads.

It may be that these wise creatures move in file to and fro over certain regions to get food from these places, like a reaping-machine, or a grazing sheep, which works backward and forward on a grassy hillside. We know that in a tobacco field they are most methodical. They take row after row of tobacco and pick the worms. And whatever man's idea of their plans and methods of work, the fact remains that their variety of roads and methods of hunting are quite in accordance with their high degree of intelligence.

Birds, like mankind, are divided into the dull, stay-at-home races and those that travel out into the great world. The former are contented with a tiny hut on a hillside, and a peach orchard; the latter, even for a brief period of life, are contented with nothing less than a hemisphere. As long as mankind did not monopolise every available area the travellers and road-makers among the birds could move more or less as they pleased; but "of late years the settlement and levelling up of

human life in the remoter regions of the world has made a vast difference to the old order of things." Many millions of birds are killed each year while they are on their way to their breeding-grounds. As a result many species are becoming very scarce and will become extinct unless an international agreement is made for their protection. The reason these travellers are so easily bagged is that they like to travel over the same route each year, unless their numbers are so thinned out that danger of extinction is imminent.

Pliny tells us that tens of thousands of quails were captured in a single day. These birds travel by night, and sometimes, when the multitudes were nearing land, the small boats were in danger of being upset by their alighting on the sails and rigging. They appeared a few years ago by the myriads on the islands of the Greek Archipelago. In the days of Moses people even tired of quail's flesh as a diet, but alas, if Moses were alive to-day he would have to pay dearly for a quail!

In North America the great auk, now extinct, was the only bird incapable of flight. Like many of his road-making friends, he lost the use of his wings, and in his surroundings the end became a certainty. Only as propellers in the water were his degenerate wings of service to him. The home

of this ill-fated bird was "the North Atlantic, south of the Arctic Circle, ranging on the American side from Labrador to Virginia, or perhaps exceptionally as far as Florida, where bones have recently been found in aboriginal shell-heaps, and on the European side from Iceland to the Bay of Biscay." In 1842 the last of these birds was killed on the American side, while the last was seen in Europe in 1844.

One of America's foremost pioneer ornithologists wrote the following account of these birds long before they were extinct: "Deprived of the use of wings, degraded as it were from the feathered ranks, and almost numbered among amphibious monsters of the deep, the auk seems condemned to dwell alone in the desolate and forsaken regions of the earth, yet aided by all-bountiful nature, it finds means to subsist, and triumphs over all the physical ills of its condition. As a diver it remains unrivalled, proceeding beneath the water, its most natural element, almost with the velocity of many birds through the air. It thus contrives to vary its situation with the season, migrating for short distances, like the finny prey upon which it feeds. In the Faroe Isles, Iceland, Greenland, and Newfoundland these birds dwell and breed in large numbers." Since these words were written the sad history of

the great auk has been completed, and nowhere in the regions that once knew him and thousands of his fellows is there even a lone survivor seen.

Road-making has had different effects upon different species of birds that have followed the practice. In some instances it has probably been the direct cause of their extinction, since in time they entirely lost control of their wings, and fell helpless prey to flesh-eating animals and birds. Those that depended altogether upon their own laid-out routes upon the ground, and thus scorned the air, or avoided flying because of the effort involved, have suffered to the utmost of their capacity for their lack of judgment or laziness, whichever it might have been. They have paid the extreme penalty that nature exacts from those of her children that try to change or modify her laws.

But those birds, like the wild turkeys of North America, that employ road-building only for purposes of self-protection and caution against the dangers that threaten their little ones have profited by their labours, and so thrive in the face of all efforts to exterminate them. For the wild turkeys do not become too dependent upon the ground; they do not forget how to fly, and flight is always a resort quickly sought in time of extreme danger. The ground has its uses to them and so has the air,

TURKEYS ARE FAMOUS FOR THEIR ROAD-MAKING

THE PARTRIDGE, A ROAD BUILDER OF CALIFORNIA

and they are wise enough not to neglect either, and thus to rob themselves of important advantages.

For the purpose of the preservation of a species, the ground is necessary for nest-building and in many cases for feeding, and the air is equally needed as an avenue of flight in time of danger. Birds will never be able to cope successfully with the many enemies more powerful than they that inhabit the surface of the earth, and air flight is their only sure means of safety. And when they lose that power they must inevitably, sooner or later, be overwhelmed and wiped out, no matter how prolific they may be in breeding, or how intelligent in matters of foraging.

Only in such places surrounded by water since time immemorial and far removed from continents, where no animals of a flesh-eating nature can reach them, is it possible for birds to lose their power of flight and yet survive. Giants though some may be, many, if not all, must succumb in time. Exceptions to this rule may immediately occur to the mind of the reader, but considered as a class, this deduction is certainly true of them.

Road-making, like many other activities in the lives of birds and men, is good to a point; but when carried beyond certain limits, when its influence tends to violate the immutable laws of nature, then

it incurs a penalty that cannot be averted. In bird life, as in human life, those inevitable necessities that existed since the beginning cannot be ignored with impunity.

CHAPTER VIII

SCAVENGERS AND STREET CLEANERS

Love you not, then, to list and hear
The crackling of the gorse flowers near,
Pouring an orange-scented tide
Of fragrance o'er the desert wide?
To hear the buzzard whimpering shrill,
Hovering above you high and still?
—Howitt, "The Honey Buzzard."

THE vultures and buzzards and kites are the feathered scavengers of the universe. They abound in warm climates, especially in marshy regions, where a rank luxuriance of organic life leaves decaying vegetation and carcasses on all sides. In some countries, notably some parts of South America, they inhabit the roofs of the houses and barns, walk the streets in droves, and cleanse the cities of all putrefaction. Certain garbage places are as carefully watched by these scavengers as city refuse cans are regularly visited by professional garbage collectors.

Wherever there is refuse or fragments of food for these valuable workers, there they are found.

It is possible that their first attraction to man-made cities was the assured daily feast. And man, being thoroughly aware of the good they do in cleaning the streets, has always encouraged their presence. In the early part of the fifteenth century the streets of London were crowded with kites, and they were ever flying around London Bridge; in the same way they were regular workers on the streets of Cairo. Not being satisfied in destroying the garbage of the streets, they actually pecked the food out of the hands of children. But those days are over, and with the coming of the modern sewerage-systems, the food-supply has been cut off from these feathered street-cleaners.

Practically all scavenger birds are members of the family commonly known as "birds of prey"; they have few claims to respectability. All the buzzards are slow and sluggish in movement, and are famed for the enormous amount of food they can devour. In spite of their unlovely ways, however, they are very valuable friends of man. In fact, they are the most useful of all the diurnal birds of prey. Their crops are veritable game-bags for numerous rats, moles, mice, insects, and other destructive vermin. The amount they destroy daily is incalculable. It is for this reason, aside from

their scavenger work, that they are so valuable to mankind.

Among the best known of these useful creatures is the turkey buzzard. He is the commonest known species of North America, and is found from the Atlantic to the Pacific coasts, and from Saskatchewan throughout North and South America to the Straits of Magellan. The turkey buzzard is very abundant west of the Alleghenies—his habitat extending from Central America almost to the Arctic regions; and he is also frequently seen in Cuba, Jamaica, Trinidad, Honduras, and Guatemala, as well as the Falkland Islands.

In the southern part of the United States buzzards are not only plentiful in the woods and on the prairies, but they come into the towns and do the scavenger work in company with the black vultures. In Kingston, Jamaica, they have become so tame that they roost upon the housetops, and are almost as common as sparrows in the streets. They are always to be found in large numbers about ranches in the West, where they will settle down upon a dead cow or sheep around which wild dogs and crows have gathered. Although the dogs snap and growl, the buzzards do not seem to mind, but only step aside to later continue their feast.

These scavengers are famed for their keen sense

of sight and smell. And especially are the senses necessary in the determination of the presence of decaying matter. Over the "Tower of Silence," in India, the vultures congregate in large flocks, and when a Parsee corpse is deposited on the planks they immediately swoop down through the open roof and devour it.

Their food usually consists of various kinds of animal matter, although they are supposed to suck eggs and occasionally to kill the young of other birds.

When they gather together about a carcass, a weird dumb-feast takes place! The silence is broken only occasionally by their flopping, pulling, and perching; the busy scuffling of clumsy feet; the clashing of big wings; and above all, wheezy, low, half-heard, serpent-like hisses. This batracho-reptilian language is all the buzzards have left of a once respectable voice.

When they recover from their long semi-stupid condition, caused from over-eating, they very wisely go through with a number of physical exercises of their volant appendages. This accounts for their ability to eat so much.

No bird is more awkward on the ground than the turkey buzzard, but while soaring in the air he is very graceful. When they are preparing for

these flights, they run and spring from the ground with a quick bound, give a few flappings of their wings, and shoot upward, for all the world like an aeroplane. When they reach a high elevation, they fly in wide circles and sail on almost horizontal wings, with tips slightly raised. It is interesting to note that they invariably navigate the air in groups of ten to twenty, never singly.

During the breeding season the turkey buzzards select a hollow tree, stump, or log, usually on the ground, or near it, and there, with no pretensions of making a nest, they lay two or three eggs. Sometimes there are three or more nests close together. This may be due to the desirability of the place rather than to a community interest. In East Texas there are places commonly referred to as "buzzards' roosts," where great numbers congregate throughout the entire year. The superstitious negroes of the river bottoms have many strange and interesting beliefs regarding these scavengers. If, for any reason, a buzzards' roost is changed from a certain locality, the negroes are much disturbed, and in some instances even move away themselves, as they think the vicinity is "hoodooed." It is a common saying among them, "When de buzzard moves, hit's time for de nigger to move, kase de place is ha'nted."

Thomas Gentry gives in the following a most interesting account of buzzard manners. He had set out the carcass of a young ground-hog as bait, and after four days was rewarded by the appearance of five buzzards. As if in obedience to orders, the three young of the family leaped on to a huge pine log that lay nearby and then "with a few quick steps, that were meant to be graceful, the female drew near, but the male lingered doubtingly behind. Soon she was busy at work, tearing with claw and with bill the daintiest morsels. Rendered mad by the smell of the food, the male, no longer seeming backward, pressed forward to her side, but only to retreat before her savage assaults. Again he essayed the attempt, and was beaten back as he had been before. Convinced that further effort would be useless, he strode sulkily to a distance, where, in moody contemplation, he nervously awaited her ladyship's sweet pleasure.

"Being filled to the full, the female now moved lazily away to a clean patch of grass, where she immediately set to work arranging her toilette—wiping her bill and her claws upon the green carpet before her, craning her neck and stretching her pinions, yawning and gaping and gaping and yawning —and finally ending all by seeking the topmost rail of a nearby fence for rest and composure.

"With nothing to fear, the male now stalked forward, and was soon hard at work at what was left of the carcass. His appetite less capacious than that of his lady, his dinner was soon over, and off he strode to a fresh spot of grass, where he went through the same process of wiping his mouth and stretching and yawning. This being finished, he mounted the rail by the side of his mistress.

"More interesting far than either of the parents were the three black creatures that stood upon the pine log. Fixed to the spot as though they had grown there, with scarcely moving heads and downcast eyes, they eagerly watched the food disappearing, wondering, mayhap, as children are prone to do, if it would all disappear before they had a chance of testing its virtues, but maintaining their souls the while in perfect serenity of repose. But their time had at length arrived, and down from the log they cast themselves instanter, three lusty fellows as large as the parents, but one of them, from his limping gate, proving to be lame. Great consideration was shown the disabled one by the others, who permitted him to feed first, while they stood aside until he had satisfied his hunger, when, without the least bit of ceremony or the least indication of ill-nature or selfishness, they set to work, finishing in quick order what edible was left of the dead

animal. Their actions after feeding were exactly the counterpart of those of the parents. Having finished their toilettes, the three sought the rail by the side of the father, where, like their illustrious heads, they were soon occupied with the most self-satisfying thoughts, utterly oblivious, as it seemed, of time and surroundings.

"More than an hour was thus spent in drowsy meditation, when, as by common consent, they all, one after the other, leaped to the ground, where they busied themselves preening their feathers and preparing for departure. The time being ripe, the female set the example. With a run of a half-dozen yards to gain a good start, she was soon on the wing, and in fifteen minutes or more she was lost in the ether. The male followed suit, and when he had vanished from sight, the young, one after the other, mounted the atmosphere, and gradually circling their way through limitless depths, were also soon lost to the earth-chained beholder."

Numbers of such stories and experiences could be told, which, to the uninitiated, would seem almost incredible. Yet there are many reliable witnesses to the facts regarding the family life of these scavengers, and it is certain that the female buzzard rules the family—a feathered autocrat—who at times finds it necessary to chastise even her mate!

Not the least beautiful phase of the buzzard's life is the perfect loving obedience of the children. They exhibit a sweet and gentle disposition under the most trying circumstances. Surely human children might well learn from the young buzzards a lesson of filial obedience and respect that would redound to the charm of the human family.

Young buzzards, when they first come out of the shell, are covered with white down, like a soft, fluffy ball. They are fed upon food disgorged by their parents. When reared in captivity, they are very tame, and will eat almost anything from earthworms to fresh meat and bread. Their service around a house is too well known to need mention. They are easily trained to do tricks, and soon learn just how to please their masters. The chief objection to them is the peculiarly offensive odour that seems to hover always with them. But perhaps this is largely due to the nature of their food.

The vultures—the kings of the scavenger world—are the ugliest of all their profession. Most of them are bald-headed, snaky-necked, milky-eyed creatures, more horrid than the mythical harpies of old. They have the wings of a Gabriel, but the head and neck of a Lucifer. Even a jackal would look respectable in company with these repulsive creatures. They can plunge their hideous bald heads

into the carcass of a dead animal without unduly soiling their feathers. Those who have seen a vulture banquet will have no difficulty in "accounting for the origin of those angry creations of the gods that defiled the banquets of King Phineus." Yet when seen at a long distance, far away beyond the clouds, soaring like a self-sure kite, all ugliness disappears. Surely in this case distance lends enchantment!

The lammergeyer or bearded vulture is the lion among vultures. Some ornithologists class him with the eagles. He is one of the aviation corps of the high mountainous regions, and many are the strange and wonderful tales told of his swooping down and carrying off little children, sheep, goats, deer, and other small animals. It is a fact that he is powerfully strong, and that his food consists partially of bones, which he breaks by allowing them to fall from a great height to the rocks below. This act gives him the name of "bone-smasher."

This notorious creature, so it is claimed, will occasionally attack a living animal, when it is able to throw it over a precipice. Sometimes these ghouls will even attack a dying man, and kill and devour him, when he is in an out-of-the-way place. But the chief food of these mountainous scavengers consists of bones and the flesh of dead animals. Like

most thieves, the lammergeyer is a thorough coward, and will attack the living only when forced to through lack of food.

Pharaoh's chicken, the commonest scavenger of the Himalayas, has many opprobrious names not pleasant to mention. He feasts on all kinds of filth and carrion, and his appearance is that of a typical "hobo." Indeed he is the "hobo" of the scavenger family. Not only is he a tramp, but he is one of the shabbiest birds in the world. His plumage is a dirty white, except the edges of his wing feathers, which are trimmed in faded brownish-black. His naked face, bill, and legs are of a dark yellowish-brown colour; while the coat of feathers on his back is ruffled and unkempt like that of a shabby street urchin. With all these poor clothes he lazily staggers when walking, like a newly awakened hobo from a hay pile! His great redeeming qualities are the faithful discharge of his duties as a scavenger, and his ability to soar high above the mountains like a white air-ship trimmed in black!

The gnat-snappers of the torrid zones, many of which destroy millions of gnats and other insects, are nocturnal in their habits. It is a common sight in Holland to see droves of swans devouring the seeds of obnoxious weeds, while in Africa cranes are the surest death to the toads of the marshes,

and the herons are the eradicators of serpents of the plains. After an overflow of the Nile, the banks are covered with innumerable reptiles and frogs, and from the shores of Greece and the Red Sea come droves of cranes, pelicans, and aboumas to eat up the carcasses which, if left to decay, would scatter disease germs far and wide.

The secretary-bird of the Cape of Good Hope scours the land for serpents to devour. This strange and singular bird has the legs of a crane and the head of an eagle, and he is most abundant in southern Africa. He is a very desirable inhabitant, and to him the natives are indebted for the destruction of innumerable insects and serpents. If the numbers of these were not checked by the secretary-bird, they would become a calamity. His names are many—archer, messenger, hunter, serpent-eater.

Secretaries, like most of the large birds of prey, build their nests among the top branches of the tallest trees. Their food, however, they seek both on dry land and in the marshes. On land they find serpents and lizards, while in the marshes they hunt insects and large tortoises. One of their most interesting habits is the peculiar method of killing their prey before eating it. If the secretary meets with a tortoise, big or little, or a serpent, he crushes it with a blow of his foot which never fails in its

death-dealing power. Should he meet a serpent too large for him to attack in this manner, he grabs it in his beak and rises high in the air, from which elevation he drops it upon rocks or a dead tree. As it falls, he follows it with lightning-like rapidity to the earth, where he attacks it while it is stunned.

The secretaries make very friendly pets, and are easily domesticated. Their natural habits are of peculiar advantage, especially in regions where serpents and frogs abound. The French established the secretaries in their colonies in Guadaloupe and Martinique.

A cousin of the secretary-bird, and much smaller, is the gymnogene, which flies lazily around, and chases its reptile-prey on foot, when it has missed it by swooping down from above.

The jackdaw is the common scavenger of the Philippine Islands. It not only feasts upon the rejected food of the streets but occasionally eats insects and reptiles. An interesting cousin of the Philippine jackdaw is frequently seen in the provincial towns of England. It is a bird that loves the high-towers for a home, and its high-pitched voice seems suited to its dwelling. In London it builds in only a few of the hundreds of churches. It seems that the pigeons are fast occupying its old headquarters.

The pariah kite of Calcutta is as plentiful there as was the kite of the London streets in days gone by, and while some of them are quite well-behaved citizens, many have become "rowdies" and "roughnecks" of the worst kind. They are very wise and know to the minute when garbage is to be put out, and are ever ready for the lion's share. They fight and scramble with each other, and with scavenger dogs and cats, worse than the turkey buzzards, snatching food right and left even out of the mouths of rival fellows with the most astounding audacity.

Kites have an interesting way of sleeping during the day with their bodies flattened against the roofs or walls, with outstretched wings, in exactly the position they are represented on the old Egyptian monuments. In this position no one, except a native of the town, would take them for living birds, but rather some form of curious ornament or decoration! Occasionally they sleep in long rows which look for all the world like a frescoe on an Egyptian wall. It is an interesting fact that most of these scavengers seem ill-humoured, sullen, and stupid. Like most of their profession their voices are hoarse and ugly and their spirits seem as dull as their bodies.

A large number of birds may be considered as occasional city scavengers. The common sparrow

A KINGFISHER IN THE ACT OF SWALLOWING HIS PREY

A ROSE-BREASTED GROSBEAK FEEDING HER YOUNG

does his part, quite unappreciated by man; and even our beloved starlings render valuable aid as street cleaners, or better, as street ornaments. Ravens are not so frequently seen on the streets, but there are still a few who refuse to live anywhere except in the cities.

No wonder that everybody loves a raven! He is one of the most amusing and fascinating of birds. He talks, sings, hops and skips, plays games, is extremely sociable, full of fun, and enjoys playing tricks both with his own kind and with human beings. He seems to do well in most all climates from the tropics to the far north. On Alaska Island his kind are very common, and in the colder regions they afford by their amusing ways and tricks much pleasure to the lonely inhabitants. It might truly be said that the ravens and whisky-jacks, or blue-jays, are the only professional entertainers of the cold climates. In the big cities the ravens are more desirable as scavengers than the common vulture. It is a great tragedy that the raven is no longer found, except in very rare cases, in many of the larger cities.

Not the least among the scavengers is the carrion-crow. He is indeed a Solomon among the bird tribe, notwithstanding his low profession. He is often found around the carcasses of dead animals in

company with dogs and buzzards, eating and fighting for his food. He has many redeemable characteristics, however, and chief among these is his love of his offspring. He will hover over and protect his children even with his own life.

Most scavenger birds, especially the buzzards, are a lazy, cowardly, degenerate set. They originally were not so depraved in their tastes. Since man became the ruler of the beasts, however, Nature has made many new offices and professions in the animal world. One of the chief of these, from the utilitarian point of view, is that of scavenger. And these have been elected from each division of the kingdom: The burying-beetle is the chief scavenger of the insects; the sharks are the scavengers of the fish-world; the alligators among the reptiles; the jackals among the mammals; while the vultures, buzzards, and kites are the chief scavengers of the bird world. So long have they followed their low profession as scavengers that their talons have weakened, and they are dull, stupid, and unfit for any other work than that which they follow, and so have fallen into slovenly ways that are perpetual.

CHAPTER IX

COURTS OF JUSTICE

Here, too, all forms of social union find,
And hence let reason, late, instruct mankind:
Here subterranean works and cities see:
Their towns aerial on the waving tree.

—*Pope.*

THE great thinkers of the human world recognise a kinship in all forms of life; men, animals, fishes and birds are made of the same stuff and built on the same plan. In the bird world may be found reflections of human institutions, a fact which does not seem incredible when it is considered that they have their own problems of community life much the same as mankind. Perhaps if this were better known, the wanton slaughter of birds for purposes of ministering to human appetites, personal adornment, pride in marksmanship, and the mad desire to add to stuffed collections would be a heathenish custom of the past.

Bird court scenes reveal ideas of right and wrong in a most startling manner. "Crow courts" are

common sights in vicinities where these birds are found. These assemblies are held at a particular tree, hill, or spot of ground away from all danger. The accused criminals are arraigned as the crow judges caw—supposedly their names! Evidently the judges are experienced, for the judgment is rendered very quickly. The entire assemblage then madly rushes for the few offenders and picks them to pieces. When a criminal is once brought to court, he rarely escapes death. As soon as the court session is over all the crows adjourn, and fly away to their various homes.

Mr. Eugene T. Zimmerman relates that, during an excursion in the country, near Salt Lake City, Utah, he accidentally became an unexpected spectator of a strange trial. About one hundred crows were arranged in a semi-circle about two of their fellows, while on the topmost branch of a dead tree, covered with a red trumpet vine, sat two which seemed to be guards. Evidently the guards were so concerned with the proceedings that they failed to detect the approach of the naturalist, and he quietly concealed himself underneath the vine.

The crows cawed back and forth to one another, but the fate of the accused was not decided at that meeting, for all at once one of the judges spied Mr. Zimmerman. With one scream of alarm the

entire court assemblage flew toward the two sentinels on the tree-top, and in a very few minutes these untrustworthy guards were literally torn into shreds. This was punishment for their failure to notify the crow court of the presence of a dangerous spectator! The crows then flew away, probably to continue the session elsewhere with more trustworthy guards

An English naturalist was riding along a quiet road one day when he was startled by a tremendous commotion in an adjacent field. Cautiously crawling to a gap in the hedge, he discovered that a large assemblage of rooks was the cause of the noise. There could be little doubt that a trial was going on. The criminal stood in the centre of a small but angry group of his sable-coated brethren. He was cawing loudly, but his pleas were drowned by the clamour of hundreds of rooks about him; and it was not long before the entire court rushed upon the poor wretch and pecked him to pieces in a few minutes. The assembly then gradually dispersed.

For some strange reason young rooks seem to take special delight in pilfering. One is almost forced to believe that it is their method of education, a special training for earning their livelihood! Be this as it may, one thing is sure—if they are caught, great punishment is meted out to them.

Blackbirds hold council meetings, apparently to decide on important questions. They seem to prefer a thick forest for these councils. Through much experience they have learned that gunpowder is a dangerous thing, and there is no doubt that they can smell it at a long distance. At the council meetings are sentinels who give the alarm at the least approach of danger. The chiefs soar about in the air, as if giving specific directions to certain guides. Some naturalists claim that these birds send scouts ahead to see if the territory is safe and is supplied with food sufficient to feed the hosts.

They do not forget kindness, and when welcomed in a vicinity, they will return the next season in increased numbers. The song of the blackbird is very beautiful; it is rich and full in tone though of little variety. It begins the latter part of February and continues with increasing power until the first of June. It mellows down through the autumn and winter. At their council meetings each blackbird seems to speak in a different key. Let us hope that the fallacious belief that the blackbird is an enemy of man has long since passed. He is the greatest friend of a farmer's field, and doubly pays for all the food he eats by destroying worms and caterpillars.

Even the water birds have their courts of justice.

The flamingos are famed for their court trials. The Rev. G. Gogerly relates this story: "The flamingo is common in the low, marshy lands of Bengal. My friend, Mr. Lacroix, the well-known missionary, when once sailing in his boat up the Hoogly, went on shore. His attention was shortly directed to a large gathering of these peculiar-looking birds in a field some distance off. Knowing their timid character, he approached as near as he could without being observed or exciting alarm; and, hiding himself behind a tree, noticed all their proceedings, which were of a most remarkable character. After a great deal of noisy clamour, they formed themselves into a circle, in the centre of which one of their number was left standing alone. Again there was a considerable amount of screeching oratory, when suddenly all the birds flew on the unhappy, solitary one and literally tore him to pieces." Mr. Lacroix came to the conclusion that one of the birds had committed a terrible offence against the laws of the bird colony, that he had been tried and found guilty, that the sentence of death had been pronounced upon him, and that his execution had taken place immediately.

Sparrows also make judicial inquiry into the actions of their fellows. They are, however, less for-

mal than most other birds in their court proceedings.

Mrs. Starks in her *Letters on Italy* tells an interesting tale of poetic justice among storks. She says: "A wild stork was brought by a farmer in the neighbourhood of Hamburg into his poultry-yard, to be the companion of a tame one he had long kept there; but the tame stork, disliking a rival, fell upon the poor stranger, and beat him so unmercifully that he was compelled to take wing, and escaped with difficulty. About four months afterward, however, the latter returned to the poultry-yard, in company with three other storks, who no sooner alighted than they fell upon the tame stork and killed him."

Four guinea-hen's eggs were placed under a duck. The duck patiently sat upon the eggs until the young guineas were hatched out, but the other ducks quacked and nodded their heads in the most surprised manner on seeing them. After a short conference, near the pool of water into which the unnatural ducklings refused to wade, a duck committee deliberately pounced upon them and pecked them to pieces. For many days Mrs. Duck remained alone in the barnyard, as though conscious that she had brought disgrace to the Duck family!

Not only do birds have their courts of justice,

but also these wise feathered people seem to make very good politicians. Perhaps the best example of republicanism is found among the grossbeaks. Sometimes a thousand of these little beings build their nests in one huge tree and form a veritable aerial city. This city is more like an immense apartment house, where each has his individual apartment, yet all is one vast building, elegantly covered with a roof which rises above the summit of the tree. They have no special offices of honour, but each bird is free to answer for himself, and lead his own life like a gentleman.

Many birds have adopted this mode of life, thus carrying out the idea of Aristophanes' aerial city—isolated from land and water. Levaillant describes one of these umbrella-like structures: "I caused it to be brought to me, by several men, who set it on a vehicle. I cut it with an axe, and saw that it was in the main a mass of Booschmannie grass, without any mixture, but so strongly woven together that it was impossible for the rain to penetrate. This is only the framework of the edifice; each bird constructs for himself a separate nest under the common pavilion. The nests occupy only the reverse of the roof; the upper part remains empty, without, however, being useless; for, raised more than the remainder of the pile, it gives to the whole sufficient

inclination, and thus preserves each little habitation. . . . Each nest is three or four inches in diameter, which is sufficiently large for the bird; but as they are in close contact around the roof, they appear to the eye to form a single edifice, and are only separated by a small opening which serves as an entry to the nest; and one entrance frequently is common to three nests, one of which is placed at the bottom, and the others on each side. It has 320 cells, and will hold 640 inhabitants, if each contains a couple, which may be doubted. Every time, however, that I have aimed at a swarm, I have killed the same number of males and females."

Bird colonies are more or less common, since it is often necessary to combine to build effective shelters against the elements, or to unite their strength in defence against their enemies.

Perhaps no better example of law and order can be found among birds than that observed by the "Twelve Apostles bird." These interesting inhabitants of Australia build their open circular nests of mud and grass quite close together for mutual protection. They work together like a group of carpenters and when the nest is completed a number of the female birds lay one egg each in the community nest, and then one of the hen birds sets upon the eggs. If, for any reason, she is killed, another

bird immediately takes her position, and when the young birds are hatched out a group of adults feeds them until they are able to feed themselves. The nest is respected as the common property of the bird group and each bird is interested in its welfare.

Some, however, like the hornbills, are never compelled to adopt such measures, as their own skill in masonry and other natural endowments render each family safe unto themselves. These interesting birds are plentiful in the tropical regions of Africa and Asia and the southernmost parts of Europe in several species. Most of them are quite large, several exceeding four feet in length. They are famed for their extraordinarily large beaks; in some species these beaks are mounted by a casque which appears like a second beak. Another unusual feature is their well-developed eyelashes. Eyelashes are somewhat rare among birds. In flying these birds produce a noise similar to a railroad train. This is caused by "the air rushing between the bases of the quills" as the under coverts of their wings do not, as is usual in birds, cover the lower part of the quills.

Yet with all these wonderful features of the hornbills, it is their nesting habits which are most interesting. The hen deposits her eggs in a nest

made in the hollow of a tree, and when she is ready to incubate she goes into the nest and is there walled in by her mate. Only a tiny hole is left as a window where he can bring her food and water during her long imprisonment. She does not in the least object to the confinement; in fact she even aids in closing up the wall with the mud that her mate brings for that purpose, and when it is finished it is exceedingly strong. If she were not shut up in this manner, monkeys, snakes, and other enemies would not only destroy the eggs or young, but would take her life also. If an attempt upon the nest is made, the female places her large bony crest over the window, effectively closing it against would-be assassins.

Several years ago Dr. Gunther, of the British Museum, exhibited before the Zoological Society of London the trunk of a tree from Cape Colony, with a hornbill's nest. "The female," he said, "when taken, was unable to fly and was simultaneously moulting all the wing and tail-feathers, thus presenting the appearance of a half-fledged young bird. This species, therefore, confirms the observation made on other species of the genus, viz., that the hornbills pass through a complete moult in the six or eight weeks during which they are imprisoned with the eggs and young."

One of the most remarkable phenomena in the life history of these strange birds is their ability to form and disgorge gizzard-sacs, or sausages. These sausages contain several kinds of food, such as lizards, small fruits, seeds, and bits of tender roots. They are adaptations which permit the male to feed the female a sufficient amount of food at one visit to last for some time. Otherwise his oft-repeated visits might disclose the position of the nest to enemies, and thus lead to her annoyance or destruction. The natives call the hornbill the "jealous bird," because it is said that if the male suspects that another bird has visited his home in his absence, he deliberately seals his mate up in the place, and goes away, leaving her to die of hunger.

It has often been observed that animals attack and destroy certain enemies on sight for no reason of appetite; and no cause can be ascribed to this except that of self-protection. There seems to be a complete understanding on their part that their welfare depends upon the destruction of all individuals of that race that they meet. This possibly accounts for the antipathy of the cat for the dog, the crow for the owl, the mangouse for the cobra. Through generations birds have learned that other birds look upon them or their nestlings with mur-

derous intent, and they never neglect an opportunity to destroy or drive them far away.

In any district where its race does not predominate, a bird of predatory habits is an outlaw in the eyes of all the other feathered inhabitants, and they band together to encompass its defeat or annihilation. And in this they are enforcing the law of their community, since law looks to the protection of the citizens of the given district from the depredations of any individuals from within or without. Surely no better motive could be found.

Once a great white owl that must have come far from his sub-arctic home, was discovered sleeping the morning hours away in the rafters of an old deserted barn in Morgan Park, Illinois. He was a large specimen and a beautiful one. Coming upon him was a surprise and a delight for the naturalist. He had entered the barn only out of curiosity in the course of a long tramp over hill and dale, but the tragedy which his entrance caused has always been a matter of regret to him. The owl slowly opened his great yellow eyes and looked down through the gloom to where the intruder stood admiring him. Then he became frightened, and, spreading his magnificent wings, he dropped to the level of the barn door and flew out into the sunlight and to his death.

His flight was uncertain as though the sunlight staggered him, and he tried to make for the woods which topped a nearby hill. But out of the sky, and as from nowhere, up from the ploughed ground and the river edge, his enemies, whom no one could have dreamed were present, came in twos and threes and sixes and sevens and finally in a flock to strike him down.

They were crows, vigilant and terrible creatures, and they were bent upon the destruction of the outlaw in their midst. The naturalist saw and heard the combat, which lasted only a few moments, and he arrived on the scene after a wild run down hill and across the fields. After a few fruitless attempts at dodging, the owl struggled fiercely with his foes, but he was doomed. Soon he fell to earth, where the naturalist found him, a bleeding and lifeless body. The great bird was nearly headless, the broad white breast had been torn entirely open, and his beautiful plumes bathed in his life's blood.

Whether the crows would have carried their revenge further on the body if not frightened away, is a question. But they had not required two minutes to destroy utterly their resplendent enemy. If any of their number was injured or killed in the course of that battle in the air, none was left on the field with the owl. The majestic culprit of a hun-

dred midnight raids upon the nests of crows and other birds, alone suffered the death penalty.

Many other instances of feathered judgment and execution could easily be cited. The more we study the world of non-human nature, the more we see how arrogant it is for man to suppose for an instant that he is the sole possessor of moral and spiritual perception. Birds have no written laws and no money-paid lawyers and judges. If man is to understand their courts of justice, their moral and spiritual codes, their unwritten family laws—he must study them from the equator to the polar circle; from the tops of the Andes, amid unscalable crags and cliffs, to the distant islands of the sea, and reed-covered banks of tropical streams. Wherever the air has a feathered inhabitant, wherever eyrie-like orchids grow, which are fertilised by iridescent, fairy-like humming-birds, wherever the northern white birds congregate along the willow-grown bottoms of the Yukon, or mass themselves in coveys like a circle of white snow-flakes, to hide from their arctic enemies—there is a perfection of law and justice unknown to man.

THE OWL AND THE CROW IN CLOSE CONVERSATION

THE TOUCAN, WITH HIS EXTRAORDINARY SAW-EDGED BILL, CAN WELL DEFEND HIMSELF

CHAPTER X

BIRDS AND THEIR BEAUTY PARLOURS

Birds, the free tenants of earth, air, and ocean,
Their forms all symmetry, their motions grace,
In plumage delicate and beautiful,
Thick without burthen, close as fish's scales,
Or loose as full-glown poppies on the gale;
With wings that seem as they'd a soul within them,
They bear their owners with such sweet enchantment.
—*Montgomery.*

THERE are no other characteristics of birds so nearly resembling human beings as those which pertain to the art of beauty. They seem to be under the dominion of the same laws and desires, seek companionship, love,—give evidences of all the human passions—jealousy, hatred, ambition; are great rivals in many ways, and always strive to appear at their best. This is true of the males quite as much as of the females.

If the female appears vain, surely the male is doubly so, and even his barber work is never neglected. Birds act as their own barbers—never trusting such important duties to another. They

use their bills for brush and comb, with an occasional special brushing against a cedar, fir, or pine bough; the blackbird has learned to dust his coat on a corn-stalk, or on the cat-tails; the finches, starlings, sparrows, robins, and innumerable others not only bathe every day, but take special sand-baths to cleanse and shine their lovely clothes.

The larger birds—such as wild turkeys, prairie chickens, guineas, and quails—go to the same sand spot day after day for their sand-bath. These places are their beauty parlours. Water birds—such as the ducks, swans, geese, herons, ibises, and pelicans—all use the water as a mirror or looking-glass. Every person who has studied their habits closely knows that these birds, after finishing their bath, stand by a clear pool of water, or on the mossy bank above the stream, and arrange their feathers before the mirror.

Bird beauties will not run the risk of spoiling their beautiful dresses in bad climates or in great storms; it is perhaps for this reason that they have become so "weather wise." Many people even use them as barometers. Ducks and geese invariably throw water over their backs before a rain. This is possibly done to prevent the drops of rain penetrating to their warm bodies through the open dry outer feathers. Swallows always foretell wet

weather by flying low. But this is because the insects which the swallows eat have been driven from the upper regions of the air by the moisture which precedes rain.

Owls rejoice at the approach of dry fair weather by screaming, hooting, and laughing, for they know it means a good hunting trip for them. A lone magpie during the brooding season foretells bad weather, because the mate has remained at home to take special care of the children, and in all ways to protect their lovely delicate plumage from the rains.

Manicure parlours are quite as necessary among birds as among humans. Nature has wisely provided many rough stones, twigs, and shells for the sharpening and polishing of beaks and nails. Storks and cranes polish their beaks in the sand; swallows and martins brush against the sand banks; while myriads of smaller birds, like the finches, sparrows, bluebirds, and wrens, use the rough bark of trees to polish and sharpen their beaks and nails.

Beauty with birds, even more than with humans, determines very largely their success in life, and with them every profession has its special form of beauty.

Each and every family of birds has some peculiar and attractive method of arranging its toilette. In most instances they take great pleasure

in it; and who can say that it is in all cases necessary to the welfare of the performer? It may be purely for the pleasure derived therefrom. This undoubtedly is true in the case of tame birds who have much time to spare. The long and lonely days in captivity would pass very slowly without such an agreeable occupation.

My brown thrush takes the greatest delight in her bath. I first met her in a dark and lonely bird-store in New York City. The keeper informed me that he had had her six years, and could not sell her because she was so ugly; that she could neither sing nor produce a sound, and for this reason he had kept her away back in a dark, dusty, cold corner, in a cage that is best undescribed.

My heart went out to this desolate lonely creature. I bought her for a small sum, much to the delight of her prison-keeper, took her home with me, and gave her a large, sunny, clean cage, with plenty of fresh gravel, good food, swings to play on, room to exercise her precious and almost lifeless wings, several near bird-neighbours, and not least of all, a big bathtub of water! Never shall I forget her joy on beholding such luxuries. And into the bathtub she plunged and bathed to her heart's content.

I found that she was troubled with parasites which constant bathing soon eradicated. Her

shaggy, ill-kept plumage began to take on a lovely sparkle of brown, and her faded breast immediately became covered with the loveliest whitish-brown specks like jewelled beads; her beak, legs and feet changed into a healthy glow, and her dull glassy eyes assumed a brilliancy equal to that of rare diamonds. Soon her nervous, frightened attitude toward me changed into one of perfect confidence and affection. She will even take a piece of apple from my hand, and give the loveliest chirp as though she were expressing gratitude.

But the definite mark of her long and lonely imprisonment without even a bathtub is still upon her. When I first got her she had all her tail feathers broken and destroyed, so I pulled out the little rough stubs that nice new ones could again grow. And soon, to my absolute surprise, a lovely row of new feathers began to appear, but alas,—they were not brown as they had once been, but almost pure white. I can only believe that long suffering has turned her feathers in the same way that it turns one's hair grey.

I am trying in every way to make the remainder of her life happy. And in her cage she has a little mirror before which she spends much time chirping and preening her lovely feathers. Evidently she enjoys "the other bird" in the mirror! At least she

is happy in her new home, and when spring returns I shall give her her freedom in the great out-of-doors, hoping that the fates may be kind to such an unfortunate being, and that she may find that peace, happiness, and freedom which we all seek.

All birds are fond of bathing, and it is not only a pleasure with them, but a necessity. For in many cases their lives depend upon their power of flight. If this power of flight be limited, they more easily fall a prey to bird-destroying animals, and even to man himself. It is a well-known fact that all migrating birds pay the strictest attention to their toilettes before starting on their long journeys.

Among the numerous ways in which birds clean their feathers, and perhaps the most common, is by means of sand or dust, and is referred to as the "dry-cleaning" process or dust-bath. We are told that even man himself occasionally takes dust-baths. The religion of the Mohammedan requires him to take a bath at a certain time each day, and this he never neglects. If he is in the desert, where there is no water, the commands of the Prophet must be obeyed, and so he takes a dust-bath! This dry-cleaning process at least serves to ease his conscience, although it would be a poor substitute according to our ideas of cleanliness.

The sand- or dust-bath is a general favourite with

many of the birds. Finches seem to bathe very rarely in water; they prefer the dry shampoo with sand. Whippoorwills have regular "public baths" in sandy roads, where they congregate late of evenings or on moonlight nights to bathe. Sparrows spend a large part of the day in dust bathing. Often a score of these carefree city dwellers will locate a particularly attractive spot, and roll and flutter in the fine dust as they chatter and chirp to one another.

Doves are more modest and seek a quiet sand-pile underneath a pine-tree or in a deep gulley, where no one will see them bathe. Partridges have a very thorough manner of dust-bathing. They carefully choose a place that is dry and free from grass or other vegetation; scratching a shallow hole, each ruffles its feathers energetically, and with every sign of keen enjoyment rolls and tumbles in the dust. A covey of partridges will select a bathing ground where each individual has its own particular dust hole to which it returns each day.

The bird of paradise seeks a shower-bath whenever it is possible, and if this is not convenient, he plunges into a pool of water or running stream. After his bath he perches on the high branch of a tree, and there dries his exquisite plumage. "The body then assumes an almost erect position, the feet

clinging very tightly to the perch, for otherwise the bird would fall backward; the wings are raised, fully extended and widely separated from the body; and the bird is seen to shake the whole body, at the same time expanding the lovely ornamental feathers, the uppermost and shortest of which are elevated the most, their ends hanging over in a graceful manner. At each side of the plume the brilliant shining orange colour is seen extending to more than half its length, and gracefully fading all round into the pure white, in a most exquisite manner, a strip of the richest red-brown, almost black in its depth of colour, running through the orange colour to about one quarter the length of the plume. During this display, the wings make a slight flapping movement, and the tail with its long bare shafts, is thrust forward under the perch. While the birds are thus showing themselves to the greatest advantage, they suddenly commence jumping and turning about on the perch in a very excited manner, uttering at the same moment a series of screams louder and more piercing than any of their ordinary notes." Thus the elaborate toilette ends with a dance and song—a real vaudeville performance!

The sea-gulls and other salt-water birds occasionally abandon their usual haunts to journey far inland to some fresh-water stream to cleanse and

beautify their plumage. They know as well as we that the cleansing power of fresh water far exceeds that of salt, and they avail themselves of it in spite of distance.

In the chosen pool or stream they sport like so many schoolboys, screaming, diving, and chasing each other in a manner unmistakably jolly and boisterous. Then they repair to some nearby sunny hillside where they sit with their faces to the wind, preening their feathers in sheer contentment. Penguins also seek fresh water whenever possible, and, although they are ill-adapted to land travel, often go far inland to seek a stream where they may rear their young.

Parrots, while not adapted to the water in any way, yet spend a great deal of their time in bathing. Their beautiful plumage is their chief pride, and they take pains to keep it in the best condition possible. Several species of African parrots are known to observe the custom of daily meeting in a dead tree, and proceeding *en masse* to a bathing-place. None but limpid water will satisfy their fastidious tastes, so they travel a considerable distance.

When they arrive there, they abandon themselves to the frolic, and roll and tumble about, throwing water with their wings until all are soaked. Then

they go to the bare tree, where they preen their feathers and complete their toilette, after which they fly away in pairs—to gather again the next morning to dry their dew-drenched plumage in the sun. Often at these parties the birds have been observed to preen each other's feathers in quite a friendly and efficient manner, not unlike our modern barbers and hair-dressers.

Humming-birds are the most fastidious, the most beautiful, and the most diminutive of all the feathered tribe. Their native haunts are only in America, and chiefly in the parts of South America where the climate is very warm. They fill the place taken in the Old World by the sun-birds. In India these sun-birds are often referred to as humming-birds; but the real humming-birds are confined to America. The brilliancy of their colours, the elegance of their forms, and the manifold arrangements and colour effects of their costumes is indescribable.

The broad-tailed humming-birds are most careful about their toilette. Every morning they go to bathe at daylight, however cold and damp the air may be. They are fond of having party-baths, like the old Romans, and may be seen in such numbers as to remind one of a swarm of bees; hither and thither they dart, in their rapid flight, dipping here

Humming-birds are most at home among the orchids of the tropics, and are as varied in form and colour as are the orchids themselves.

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and there into the water with their feet and breasts, and repeating the act until their plumage is thoroughly cleansed. When they have completed their dainty toilettes, these beautiful little winged-elves go forth upon their daily duties amid the flowers. And at the end of the day they often gather again to refresh themselves with another dainty dip before seeking their homes for rest.

The famous saber-winged humming-bird is one of the most beautiful of bird beings. With its brilliant green and violet-blue hues, and tail of black and white, it is more like some brilliant oriental jewel than a bird. This little fellow bathes in the dew that collects upon the leaves of trees. Certain trees that hold the moisture in their foliage become dainty bathing resorts, and in the early morning hours they are often filled to capacity.

To enter into the habits and different characteristics of these marvellous creatures would require a book in itself. It is enough to know that their idea of cleanliness and beauty is unsurpassed. When flying through the sunlight they sparkle as if they were covered with brilliant jewels and gems of gold. The American Indians with their characteristic rugged poetry of thought, called them "the hairs of the sun."

The topaz-throated humming-bird is among the

largest known. There are two species—the crimson, of Guinea and the lower Amazon, and the fiery, of the northern tributaries of the Amazon. The fire-tailed or comet humming-birds are of two species, and their native homes are in Peru, Bolivia, and the Argentine Republic. "The tails of the males blaze with the radiance of flashes of flame, and their ruby backs, luminous green throats, and under surface present a *tout ensemble* unparalleled in the range of ornithology."

It is claimed that many of these jewel-like creatures, especially the smallest—which is of a rich violet colour and the size of a bee—bathe in nectar in the cups of flowers. Imagine this tiny being, with a throat and neck the colour of a brilliant amethyst, changing into various shades of purple and brown, bathing in a large red-cupped flower of nectar! Or a superb specimen with a sky-blue crown upon its head, a brilliant scarlet throat, golden-green back, head, and tail, plunging into a large flower-like bowl of crystal water for a bath! Surely no words can convey an idea of such delicate beauty.

"Of all animated beings," says Buffon, "they are the most fairy-like in form, the most brilliant in colouring. Our precious stones and metals, polished by the hand of art, are as nothing in comparison

with these rich jewels of Nature. Song excepted, she has showered upon them all her gifts collectively, gifts which are accorded to other birds singly. Lightness, vivacity, speed, grace, and brilliant colours, have all been bestowed upon these tiny favourites. Every jewel sparkles in their plumage —plumage untarnished by the dust of earth, as, all their life long, they seldom touch the ground; they dwell evermore in the air, fluttering from flower to flower, the freshness and brightness whereof belong to them alone; they sip the nectar, and inhabit only those heavenly zones where blossom follows upon blossom in an everlasting spring."

Only a rich imagination can think of a human queen with such luxury and beauty; and no beauty parlour can boast of such perfumed baths as these divine sun-gems find conveniently at hand in every garden and tropical forest in the regions where they live. One is reminded of the English poet's words:

"Bright birds of the sun, how has every hue
Of the sky and the rainbow been lavished on you!
Where are the robes that a monarch enfold,
Compared with your feathers of silver and gold?
Ye are richly arrayed, without toil and care,
And the flower-bells furnish your daily fare:
A feast every morning before you is spread;
Ye are gloriously clothed, and luxuriously fed.
And ye drink the pure nectar, and cry te-re,
As ye fly from the flower to the blossoming tree.

Swift as an arrow ye hasten along:
Now ye are gleaming the lilies among;
Now through the gardens of roses you speed;
Now on the lofty magnolias you feed.
Gay birds of the sun! Your plumes are as bright
As if you had bathed in his fountain of light.
It is lovely indeed your wings to behold,
All gleaming and glistening with azure and gold,
While ye drink the pure nectar, and cry te-re,
As ye fly from the flower to the blossoming tree."

Nature has provided all birds with the means of keeping their plumage in the best condition, and many birds have adapted themselves well to the process; while some are possessed of additional equipment in the art. Every bird has a constant supply of excellent oil for toilette use, which, by means of the bill, is distributed about the body in proportion to the size and importance of the feathers. Two tiny tanks of the fluid are located on the bird's body just above the rump, and whenever a little oil is needed for polishing up a shabby feather or dusting a plume, all the bird has to do is to pinch them with his beak, and out comes the loveliest hair-oil imaginable!

Water-birds are especially dependent upon the oil for their plumage; in fact, their very lives depend upon it. In order to keep their bodies dry and warm the feathers are kept heavily oiled so as

to present a water-proof surface. It is likewise necessary that the feathers be well laid in place that the water might be kept out. It is also true that such a surface enables the bird to glide more easily through the water. Any disarrangement might cause a leak, and the bird would be chilled almost fatally. This necessitates great care on the part of these birds in the condition and treatment of their feathers, since any mishap of the kind would put an end, at least for the time being, to their natural pursuits, which means in most cases their means of livelihood.

Ducks and cormorants employ their long necks to aid them in their toilette; they find them excellent brushes. After oiling their plumage, they rub their smooth necks over it until each feather is straightened and polished to perfection.

It is most interesting to watch a group of cormorants make their toilette after they have returned to their haunts from fishing. They sit for a long time with wings half-spread, so as to dry the feathers most quickly. In this position they present a peculiar sight; one might think them angry, or frightened, if the general poise of the body did not belie the assumption. When their feathers are dry enough to retain oil, they carefully dress each feather.

The motmot of Central America possesses an extra equipment for his toilette in a very peculiarly formed beak, edged like a saw, and this he uses to advantage. It is especially convenient for his barber work. He deliberately trims the feathers of his tail to the predominating style of his race. His barbering is so neatly done that to the uninitiated his shapely feathers are supposed to have grown in their attractive lines; but it is all his own skilful work. And the rest of his toilette is made with equal art and pains.

The night-jar and the heron possess still another tool on the claw of the third toe, which is toothed or serrated, and this they use most efficiently in the care of their plumage. It is a real comb, being roughly the same shape.

One of the strangest of all birds is the hoatzin, a native of the Amazon Valley. This creature has thumbs, which are used not only in making its toilette, but in climbing as well. The hoatzin is the "missing link" between birds and reptiles. Its wings were originally forefeet or hands, like those of the lizard, and to-day its wing joint still has a thumb and two fingers. By means of these it climbs around in trees, and rarely, if ever, comes to the ground. It is usually found in low bushes or trees

THE AMERICAN CROSSBILL ON A TWIG THAT SETS HIM OFF TO THE GREATEST ADVANTAGE

THE ORIOLE'S "BEAUTY PARLOUR" IS HIS UNIQUE HOME

along streams in the regions of its home, and generally flocks of twenty or thirty consort together.

"In the early morning or in the late afternoon," says Quelch, "they (hoatzins) will be seen sitting in numbers on the plants, while toward the middle of the day, as the fierce heat of the sun increases, they betake themselves to shelter, either in the dense recesses of the growth, or among the individual trees of denser foliage, or among the tangled masses of creeping and climbing vines, along the very edge of the water. Late in the evening, after feeding, they will be seen settling themselves down in suitable places for the night."

These strange climbers feed almost exclusively upon the leaves of trees and shrubs. One of their favourite foods is the leaf of an arum, which gives to their flesh a terrible odour. Hence they have earned for themselves the title of "skunk birds" or "stink birds." This odour seems very pleasing to the hoatzins, and it is perhaps their favourite perfume! At any rate it serves to protect them, as no man or animal cares to come in contact with it. In making their toilette they thus have the double advantage of fingers and perfume.

Herons, bitterns, the tinamous, and some hawks are the possessors of powder-puffs. Patches of feathers that crumble into fine dust are located upon

their bodies. Herons have four great patches, two on the breast and two on the thighs; but in some birds they are scattered over the entire body. That this condition is of aid in the drying process is highly probable, although, as yet, it has not been proved.

All birds of any part of the earth have methods and processes by which they maintain their beauty and the usefulness of their feathers at the highest possible standard. There is no one who has not witnessed many of these various ablutions among the birds of this or that particular region, and many interesting tales are told about them. All species accept the necessity and desirability of beautifying themselves, and proceed with the art according to their abilities and modes of life.

Perhaps as time goes on bird life will take on new phases, and conditions not yet dreamed of may make it imperative that those birds which survive advance still farther in the details of their toilettes. If ever such changes occur nature will provide the means for more elaborate methods, and the mentality of birds—which, it is the author's belief, already far exceeds the generally accepted estimate—will meet the new conditions with the same intelligence and insight with which they have faced the different adjustments of life since first their race began. All necessities they have met and overcome in their way

and according to their needs—which is, after all, the extent of man's boasted accomplishments. And birds will always live and thrive, despite local calamities, and the extinction of certain species.

In form and structure they may change, the spread of civilisation may rob them in time of all their wild-wood haunts, but their race will live on; and as man progresses in knowledge and understanding it will be a simple matter for them to adjust themselves to his proximity. But no change, however gradual, due entirely to environment, could reduce the sum of beauty among the birds; and that which they have they will care for and nurture, both because of necessity and because of that rare esthetic taste which they possess in a hardly less degree than man himself.

CHAPTER XI

AVIATORS

High on the cliffs, down on the shelly reef,
Or gliding like a silver-shaded cloud
Through the blue heaven, the mighty albatross
Inhaled the breezes, sought his humble food,
Or, where his kindred like a flock reposed,
Without a shepherd, on the grassy downs,
Smoothed his white fleece, and slumbered in
their midst.

—Montgomery.

AVIATION is a new art in the human world, but with birds it is as old as the hills, and it is their most important accomplishment. All birds either fly or have been fliers at some time in their race history; many can scarcely walk at all on the ground, and consequently spend their lives among the clouds—coming to earth only long enough to rear their young. They are kings indeed, and have that great gift—flight—which nature has denied even to man.

Of all bird-aviators those of the sea are of necessity most successful in sustained flight. Nothing so

adds to the joy of a sea-voyage as these children of the wind and billows, who range in size from the tiny petrels to the mighty albatross. This gigantic, gull-like bird presents an interesting appearance, with its "powerful body, short, thick neck, large head, extraordinarily long, narrow wings, short, forked tail, a very sharp trenchant beak . . . and plumage very close and thick." Save for its black pinions, it is entirely white, and the contrast gives it a striking and dignified beauty. Its beak is carnation-red, with a yellow tip; its feet are reddish, and its eyes are brown, surrounded by a rainbow of green. From tip to tip of its wings an albatross often measures ten feet.

The albatross will follow a vessel on the ocean for several days without once alighting on the water. Its flight is indeed majestic. With outstretched wings it sails over the sea, now high, now low, wheeling until its wings are at an angle with the horizon, then suddenly descending until it all but touches the water—it is the master aviator of the world! At times it seems to float through the air motionless, except for the quick glances of its eyes and an occasional movement of its head.

"Tranquil its spirit seemed and floated slow;
Even in its very motion there was rest."

Bennett says: "It is delightful to watch the gloriously graceful movements of this splendid bird, which seem to impel it through the air as if by some hidden force—for one can scarcely perceive the slightest motion of the wings after the bird has once gotten under way—and one sees it rise and fall, in such a manner as to lead to the belief that these movements are brought about by some unknown power."

The albatross, like the petrel, flies both day and night, and seems rarely to need rest. It continually watches the waves for food; everything of an animal nature which is thrown from a ship is hastily gorged down. Carcasses of dead whales, or large fish, are always surrounded by these great scavenger-aviators. When a whale is being "flensed" they actually become so bold as to snatch pieces of blubber from the sailors' hands, apparently having lost all fear. In addition to the food they receive from ships, they feed upon jelly-fish, cuttle-fish, and various small aquatic animals.

In its long journeys over the sea in search of food, the peculiar formation of the wings gives this bird an advantage over all rivals. "The albatross has," says Mr. Lucas, "that type of wing which best fulfils the conditions necessary for an aeroplane, being long and narrow, so that while a full-grown

albatross may spread from ten to twelve feet from tip to tip, its wings are not more than nine inches wide. The spread of wings is gained by the elongation of the inner bones of the wing, and by increasing the number of secondaries, there being about forty of these feathers in the wing of the albatross."

To those who live upon the waters one of the greatest marvels is the power of flight of these great birds. They never tire night and day; they "wheel round and round, and forever round the ship—now far behind, now sweeping past in a long rapid survey like a perfect skater on an uneven field of ice. There is no effort; watch as closely as you will, you rarely or never see a stroke of the mighty pinion. The flight is generally near the water, often close to it. You lose sight of the bird as he disappears in the hollow between the waves, and catch him again as he rises over the crest; but how he rises and whence comes the propelling force is to the eye inexplicable. He merely alters the angle at which the wings are inclined; usually they are parallel to the water and horizontal; but when he turns to ascend or makes a change in his direction, the wings then point at an angle, one to the sky, the other to the water."

Perhaps the commonest of all sea-aviators are the

sea-swallows and terns. These daring little people of the air live on the waste from ships and various water insects and animals. Their wings seem never to grow weary, and if they should, the tiny creatures have but to settle on a wave while it rocks and lulls them to sleep amid the swelling foam and lace-like seaweed of the ocean. Distance has no terror for them. If one suddenly desires to fly home to distant Fundy or to a nameless craig near Cape Horn, it rises like a wind-blown feather and disappears like a vision in the distance! How clumsy are our airships, with their awkward planes, compared to the dainty wings and the lightning-like rapidity of motion which whirls this little fellow over thousands of miles of trackless water!

The frigate bird is one of the most powerful aeronauts, and might be termed the "Zeppelin" of the air. He can dive from the clouds with astounding rapidity, and is quite as much at home on the water as in the air. His body is no larger than a raven's, yet his wings are the most remarkable, and comparatively the longest of any of the aviators. His beak is exceedingly sharp and strong, winning for him the title, "the eagle of the sea." Because of his terrible talons, he is the most dreaded of birds. He soars among the clouds like a giant airship, and drops like a cannon-ball upon his helpless prey.

Michelet, in speaking of one of these aviators, said: "It is the little ocean eagle, first and chief of the winged race, the daring navigator who never furls his sails, the lord of the tempest, the scorner of all peril—the man-of-war or frigate-bird. . . . (He) is virtually nothing more than wings: scarcely any body—barely as large as that of the domestic cock—while his prodigious pinions are fifteen feet in span. The great problem of flight is solved and overpassed, for the power of flight seems useless. Such a bird, naturally sustained by such supports, need but allow himself to be borne along. The storm bursts; he mounts to lofty heights, where he finds tranquillity . . . literally, he sleeps upon the storm. When he chooses to oar his way seriously, all distance vanishes: he breakfasts at the Senegal; he dines in America."

This marvellous aviator travels day and night without apparent weariness. He seems to rest upon the winds, fearing nothing, not even the tyrants of the air—the condors and pygargues! Thus we see this huge airship floating in the heavens, while far below him are the snow-white sea swallows playing in the waves. And one is reminded of the poet's words:

"Wings to soar above life;
Wings to soar beyond death!"

Among the most daring of the aviators may be ranked the petrels. These graceful fliers seem to inhabit the sea as well as the land. There are several species of the giant petrel, which travels to the ice-cliffs of the South. The stormy petrel is the smallest web-footed bird known. Its powers of flight and endurance are almost unthinkable; it can brave the fiercest storm, gliding in and out among the troughs made by the waves. It is one of Neptune's flowers of the ocean—an aviator of the sea.

Powerful as are the flights of the larger aviators of the bird world, yet they are not more so in proportion than that of many of the smallest and daintiest of fliers, such as the gold-crests, whose tiny bodies appear like miniature fluffs of feathers, each weighing about seventy grains. The ox-eye tit is often found from 700 to 900 miles from land, and numerous small birds cross the Atlantic.

But these are not ocean aviators in the true sense of the word. Perhaps the shearwaters, which are supposed to breed in the far Antarctic regions, are allies of the petrels, and, like them, nest in burrows or caves, are the best known ocean wanderers. As soon as the young are able to fly, they are attracted to the sea—and roam over the southern waters, then across the equator, and, according to the old sailors, land in Nova Scotia. During the spring

and summer they are numerous over the northern waters, but when autumn comes on they suddenly disappear toward the Southland.

The shearwaters are divided into two or three distinct varieties. The "greater shearwaters" are usually the more abundant in number; while the "sooty shearwaters" are not only fewer, but seem not to rank in the aristocratic class of their cousins. Between them there is a distinct colour line, and when the aristocrats are sailing over certain waters, the darker cousins are not to be seen; and vice versa.

The ocean aviators are as numerous as they are varied in size and colour. Their laws are known only to themselves, for no man has ever followed them in all their strange wanderings. They have learned to fly in the face of the most raging storm, and manage their apparently frail air-ship bodies to the despair of human fliers.

Nothing is more picturesque than a white-winged fleet of them. In the Arctic and Antarctic solitudes they cover the waters like so many living flowers. Some go about in circles like mammoth water-lilies, spread upon the white-capped waves; others, with pearly mantles, swim in long lines; again they herd together like a profusion of flowers in a bowl of white foam, while the air above is star-like with myriads of sea-gulls. A lover of na-

ture soon becomes spellbound at such a vision of aviators who so suddenly can transform their machines into diving submarines!

Not the least interesting among water-aviators are Franklin's rosy gulls. These birds have a black hood over the head and the upper part of the neck, trimmed in pearl-grey, and the under portions of their bodies are white with a rose tint. They are found only in the West, where they roam over the prairies of North Dakota to the Arctic Ocean during the breeding season. The natives refer to them as "prairie pigeons," and they make a beautiful sight following the farmer in flocks as he ploughs in the fields.

How such delicate machines as the wings and bodies of these aviators are able to make such prodigious flights as they do is understood only after an investigation of their marvellous mechanism. The chief muscles are those which control the wings and legs. Every variety of bird has a body adapted in the most efficient manner to serve the purpose of its life. Aviators, of course, have their bodies especially suited to their profession. And it is true that "the bird is a masterpiece, a marvel of creation."

The home of a true aviator is the air. In it he lives; that which he controls, he is still governed by.

The pelican has a regular air-pouch in his breast, and every bone in his body is filled with air. In many birds, however, only two bones are thus filled with air. The air passed through the bones facilitates respiration under varied circumstances and thus aids the aviator in flight.

The aviator's wings are made in a wonderful way: the feathers are arranged like shingles on a roof, one overlapping the other. They are so arched as to give a convex form to the upper part of the wing. Dr. Brehm thus describes the bird's movements: "By raising the pinion, the air is allowed to pass between the feathers, while in its descent they offer an insuperable resistance. This partially explains the fact that a bird always either rises with each stroke of the wing, or keeps at the same level, and is never in the least depressed by it. The forward movement is attributable to the fact that all strokes of the pinion do not fall in a perpendicular direction, but slope obliquely downward from the front toward the back. By this means the wing is so canted as not to present its surface horizontally to the air on rising, but rather to cut through with its edge. Moreover, the pressure of the pinion downward is quite equal to four times that of the upward stroke: this is proved by a simple examination of the respective muscles. The

tail serves as a rudder, and is bent somewhat in an upward direction while the bird is rising, and in a downward one in its descent; in turning it takes a slanting position. When soaring or circling, the tail alone directs the course of flight, while the position of the apparently motionless wings determines the greater or less rapidity of the same. The relative rapidity and the nature of the flight is in perfect harmony with the formation of the wing and the construction of the feathers. All birds possessing long, narrow, sharp-pointed wings and close, smooth plumage are rapid fliers in a straight line, though unable to diverge from their course with the same quickness as birds with shorter and rounder wings. With the faster fliers the wings overlap the tail, while with those which can turn quickly the tail generally exceeds the wings in length. Good fliers often have the tail forked, although the contrary sometimes occurs when the tail has long centre feathers. Large, broad, rounded wings are well adapted for rising, and for long and easy soaring at great elevations; but they render descent difficult. Those birds, however, which carry pointed wings can rush with them half expanded from a considerable height. Short round wings render flight more difficult, and make it necessary to use very rapid and strong strokes. The greater or less

amount of noise made in flying is caused partially by the hardness or softness of the pinion-feathers, and partly from the relative rapidity or slowness of the strokes of the wings. Quick fliers move with a rushing, whistling sound; slower fliers, silently. The former motion is found with short-winged, and the latter with broad-winged birds."

Thus we see that bird aviators are adepts at every known form of air navigation, from that which is carried on by regular beats of the wings to soaring, gliding, hovering, dropping, plunging, and zigzagging. Storks, eagles, crows, and pelicans are skilled in the art of soaring, while examples of gliders may be found among the pigeons and falcons. Condors sometimes soar to a giddy height over mountains, and then hover in the clouds; buzzards are also gifted in this art. The most skilled in the art of hovering is the kestrel. This is the antithesis of soaring. While hovering, the kestrel remains poised over the same spot apparently motionless, but in fact the wings are beating with great rapidity. The humming-bird is a professional hoverer. The everglade kite has a most unusual way of anchoring itself in the air. It has learned to hover motionless at a great height, with the exception of its expanded tail, which moves from side to side. This enables it to remain stationary for a long period.

This brief review of the winged aviators might be prolonged indefinitely, as each species and family has its own peculiarities and advantages in flight, always suited to its needs. The wisdom of Nature surpasseth human understanding, and nowhere is this more vividly shown than in the study of flying birds. Their equipment is based upon the soundest principles of science—principles that man has acquired only in very recent times.

The battles in the air, which have seemed to us to surpass all else in all the field of romance, are ancient history in the bird world. Every day countless struggles are fought and won among birds, like our modern military aeroplanes—singly or in squadrons. Who has not seen a group of small birds combine to attack a large stranger, who is bent upon mischief in their territory? Sparrows in great numbers often attack crows, and even mocking-birds; and all the birds of a large area will combine to destroy a common enemy, like the owl.

Sometimes even a great black eagle will be attacked and hounded by one or more purple martins; these tiny, fearless little warriors pursue their enemy day after day, until he is banished from their district. The feats which they perform in these encounters are remarkable even to those versed in such matters. One of them will rise into the air

and drop upon the back of the eagle, clinging to him like a leech until he flees in sheer desperation. Even then the doughty warrior will ride his enemy a long distance from the battle-field to insure his defeat before returning to his fellows.

From birds we have learned much that we know to-day about navigation of the air, and it is probable that from them we will continue to progress. But it is reasonably certain that we will never become so proficient that we can ever look with contempt upon their knowledge and their feats as simple or unintelligent. Theirs is the skill that constant practice brings, theirs is the knowledge that Nature gives, and only Nature can give. Man in all his wonderful works and inventions can never hope to equal what has been done by a higher hand than his; he can imitate, but never can he create, or surpass.

CHAPTER XII

BIRD FISHERMEN

See how he stalks along the pebbly strand,
With keen eye watching each subaqueous motion;
Wading knee-deep, for hours he will stand,
Yet as for taking cold, he scorns the notion!

He needs no rod, nor line, nor fishing book,
Although he makes his living on the water;
He catches all his fish without a hook,
And when he's 'gotten haud' he gives no quarter.
—From "The Heron."

IN the bird world, as in the human, there are many professional fishermen. On the other hand there are numerous birds that "go fishing" occasionally, apparently for the sport there is in it. The best anglers, however, are those that make it a profession. Each fisher has his peculiar and favourite method of fishing. Some fish in the daytime, others at night; some fish in large groups, while others go singly. The implements they use are as varied as they are numerous, and the kind of fish desired largely determines the place and method of fishing.

The kingfishers, as the name implies, are perhaps the best fishers of the feathered tribe. This group of birds is divided into no less than two hundred species, and each species differs somewhat in habits. Dr. Sharpe says they "are alike remarkable for their brilliant colouration and for the variety of curious and aberrant forms included among their number." Their plumage is unusually brilliant and attractive, with artistically arranged colour schemes in the patterns.

These fishers feed principally upon fish which they capture alive. Their favourite position seems to be on an overhanging bough, a projecting dead log, or a large stone from which they keep a close watch for their prey. They also like to hang over the water with vibrating wings ready to plunge down upon any luckless fish that may appear. In speaking of the belted kingfisher, Major Bendire says: "Every bird seems to have favourite perches along its range, each perhaps quite a distance away from the next, to which it flies from time to time, generally uttering its well-known shrill rattle in doing so. It is a watchful, rather shy bird, sitting frequently for an hour at a time in the same position, occasionally moving its head backward and forward, watching for its prey as a cat does for a mouse. In such a position the kingfisher is one of

the most charming features of brook and pool. Should an unfortunate fish come within sight at such times, our lone fisherman is at once alert enough, craning its neck and looking into the water, until the proper moment arrives to plunge downward, head first, disappearing out of sight, and usually emerging with a wriggling captive firmly grasped in its bill." It sometimes happens that the kingfisher stays under water for several minutes, and at last returns to the surface without his game. But such is his skill and perseverance that a failure seldom happens.

One of the most beautiful of the kingfishers is scientifically known as *Alcedo ispida*. His favourite hunting-grounds are along the streams and ponds, and even around small springs. This beautiful bird is much sought after because of his exquisite plumage. His head and neck are of an emerald green, and the feathers are tipped in bluish-green, while his back is greenish-blue—wavering in colour as the light falls upon it. The lower part of the kingfisher's body is of a light brown mingled with dark red. One is reminded of the poet's words:

"The halcyon flew across the stream,
And the silver brooklet caught the gleam;

EVERY MINUTE OF THE DAY NUMBERS OF FISH ARE BROUGHT BY THE PARENT BIRDS TO THEIR EVER HUNGRY YOUNG.
(WHITE PELICANS)

BROWN PELICANS OFTEN USE STRATEGY IN THEIR FISHING

The glittering flash of his dazzling wings
Was such as the gorgeous rainbow flings,
In broken rays through the tearful sky,
On a sunny eve in bright July."

Lack of space forbids mention of many of these interesting fishers of the bird world, but the laughing kingfisher, or laughing jackass, deserves special notice. This fisher is sometimes known as bushman's clock, and a clock he is indeed! For in the *Bush Wanderings of a Naturalist* we are told that: "About an hour before sunrise the bushman is awakened by the most discordant sounds, as if a troop of friends were shouting, whooping, and laughing around him in one wild chorus; this is the morning song of the laughing jackass, warning his feathered mates that daybreak is at hand. At noon the same wild laugh is heard, and as the sun sinks into the West, it again rings through the forest." This bird's home is in Australia and New Guinea.

The herons are fishers of great talent and importance in the bird world. They are the "still-fishers" of the feathered tribe, and frequent the gloomy marshes of deep forests or shallow streams, where they stand silent and motionless as a sphinx, ready at the appearance of a fish to transfix him with their sharp, dagger-like beaks. They seem to

have the patience of Job, and will wait indefinitely for their prey.

Although there are many species of herons, and most of them are cosmopolitan in the matter of distribution, they usually inhabit swamps, marshes, and occasionally the sea-coast. All these birds have many characteristics in common. In speaking of these, Hudson says: "Two interesting traits of the heron (and they have a necessary connection) are its tireless watchfulness and its insatiable voracity; for these characteristics have not, I think, been exaggerated even by the most sensational of ornithologists. In other birds of other genera, repletion is invariably followed by a period of listless inactivity during which no food is taken or required. But the heron digests his food so rapidly that, however much he devours, he is always ready to gorge again; consequently he is not benefited by what he eats, and appears in the same state of semi-starvation when food is abundant as in times of scarcity. . . . All other species that feed at the same table with the heron, from the little kingfisher to the towering flamingo, become excessively fat at certain seasons, and are at all times so healthy and vigorous that, compared with them, the heron is a mere ghost of a bird."

These fishers, because of their beautiful plumage,

have been long and cruelly persecuted. Their habits of meeting and breeding in colonies also tend to their destruction, as a heronry is usually a place of wholesale slaughter when found by plume-hunters. Not only do the herons congregate as a distinct family, but they also welcome many other varieties of birds to their colonies. In the Trinity River bottoms of Texas there were, a few years ago, heronries where thousands of marsh and water birds had formed a little city for the purpose of rearing their young.

Baldamus gives a remarkable description of such a scene. He says: "A sight more varied, charming, or beautiful, would be hard to find than these . . . marshes with their feathered inhabitants, which are as remarkable for the different individual habits of each species as for the diversity of their form and plumage. Observe the most striking members of this community of marsh and water birds, and conceive for a moment these snow-white, straw-coloured, grey, black, primatic, gold and purple, these green and red-headed, crested, eared, long and short-legged creatures, standing, stalking, running, climbing, swimming, diving, flying; in short, living masses, striking in shape and colour, standing out in bold relief against the bright blue heavens and brilliant green of the meadows, and one must allow

that this specimen of bird life in the swamp is a most lovely sight."

The noise and rush around these "fishermen towns" is unbelievable except to one who has visited one of the colonies. Every minute of the day numbers of fish are brought by the parent birds to their ever-hungry young. And there is a constant stench in the air caused from decaying fish and dead birds lying about.

Many birds have become so proficient in fishing that they use strategy of a high order to obtain the best results. Among these the pelicans rank high, and their tactics show a marked degree of intelligence if not of forethought. They "go fishing" not singly but in large groups, and, forming a wide semi-circle, drive a shoal of fishes before them to the shore. At the opportune moment, when the fishes are rounded up, they set to catching them with the hilarity of South Sea Islanders.

At times they wait on the banks for hours for the fish to come in. Then the leader arises from his sitting position and slowly wades into the water, followed by his flock of faithful fishers. They swim out far into the water, and suddenly, as if by some unseen sign from him, they wheel around, begin flopping their wings and rushing in line toward the shore. Meanwhile their heads are lowered into the

The osprey rarely fishes for himself, as he finds it easier to waylay other fishers and rob them.

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water, and their great beaks are spread open like so many fishing-nets. By the time they reach the shore, each bird usually has his immense pouch well-filled with fish. Cormorants feed in the same way, with the exception that they do not fish quite so successfully in droves. It seems that they are not so skilled in united efforts as are the pelicans; but both are clever fishermen, and employ good tactics in their work.

The grey pelican, according to Jerdon, has a strong musky odour, which some naturalists believe attracts fishes, and for this reason it is used by fishermen in eastern Bengal to aid in attracting and catching certain species of fish. The numerous kinds of colisa are attracted by the odour and oil of these birds and congregate in large numbers where they are present. As a result many are caught. Cormorants also have a musky odour which comes from their oily skins.

These birds are easily tamed and trained, and sometimes used successfully by the Chinese in catching fish. Sir George Staunton, in his *Embassy to China,* tells how, during his journey to Hau-choo-foo, "the Embassy had not proceeded far on the southern branch of the canal when they arrived in the vicinity of the place where the . . . famed fishing-bird is bred, and instructed in the art and prac-

tice of supplying his owner with fish in great abundance. On a large lake . . . are thousands of small boats and rafts built entirely for this species of fishery. On each boat or raft are ten or a dozen birds, which, at a signal from the owner, plunge into the water; and it is astonishing to see the enormous size of fish with which they return. . . . They appeared to be so well trained, that it did not require either ring or cord about their throats to prevent them from swallowing any portion of their prey, except what the master was pleased to return to them for encouragement and food. The boat used by these fishermen is of a remarkably light make, and is often carried to the lake . . . together with the fishing-birds, by the men who are to be supported by it."

In England, at one time, cormorants were kept and trained as fishers, in the same way that falcons were trained to hunt in the air. During the reign of James I, the practice of keeping cormorants became so much a matter of course that the office of Master of the Royal Cormorants was established, and one John Wood was the first to hold the place. He was described as the "Keeper of His Majesty's cormorants, ospreys, and otters"; evidently the latter were also used for fishing. The King's cormorant station was at Westminster, on the river. It is

probable that the sport with these trained fishers was not a success, as it was never developed to the degree reached by falconry.

It was a custom in both England and China to tie a leather strap or a ring around the lower part of the cormorant's neck so that he could not swallow his prey. This is not as cruel as it might seem at first thought, as the cormorant's gullet is as elastic as a rubber bag and very capacious. So elastic are they that in Greenland the fishermen use the gullets blown up and tied at each end for floating bladders to support their fishing-nets.

These birds are as cunning as foxes; they take great delight in the sport of fishing, and leave no rock or cave unexamined for prey. The fish seem to know and dread them, and if there is a muddy bottom to the water, or any small caves near, they try to hide themselves from their green-eyed enemies. They very seldom succeed, however, even though they should jump clear out of the water in their attempt to escape, for the cormorants are exceedingly quick, and usually catch the fish even if it has escaped at first.

If the fish is caught in the wrong position for swallowing, the cormorant tosses it into the air, like a professional juggler would a ball, until it is properly caught, then it is swallowed. Sometimes

six to ten of these are taken into the cormorant's pouch before it is called into the boat to "cough up" its prey. When the signal is given by the keeper for the fisherbirds to disgorge, each quickly responds, and as a reward is given one or two fish to eat. When cormorants are feeding their young, they sometimes open their mouths and allow the babies to take out of their capacious throats what food they desire. This is done by many of the fishing birds.

The eagle, so far as is generally known, appears to be only an indifferent fisher, yet it is positively known to devour fish and to feed them to its young. This regal bird may be seen along the wild stretches of the Atlantic sea-board. It is known to build in proximity to the sea, but it is rarely, if ever, observed in the act of taking fish from the water.

Its method is one of robbery, and in the execution of its plans it proves itself a strategist, if not a fisherman. Indeed its cleverness makes it unnecessary for it to learn the fisherman's trade. Very often an osprey, as well as other smaller sea birds, will rise from the water with a glistening fish in its talons, only to be overtaken in the twinkling of an eye by an eagle that has been watching from afar the beautiful white fisher at work. The eagle appears as from nowhere, and the chase that ensues is

THE SANDHILL CRANES IN THEIR NATURAL HABITAT

THE WOOD-DUCK FISHES IN SMALL PONDS

likely to end far beyond the observer's range of vision. On some occasions, however, it may end where the watcher on the beach can see the osprey's final defeat. It will drop the fish when the eagle is at last upon it, and before the flashing object has fallen more than a few feet, the eagle has seized it. This last instant in the pursuit is well calculated, for it is invariably noticed that the eagle flies lower than the osprey, as if in perfect readiness for what it knows will be the last resort of its victim.

This power of strategy in birds is not confined to fishers, but is a marked gift of many other birds, especially birds of prey. The hen-hawk ranks high in this respect. It seems to be commonly admitted that the hawk, like all large birds, makes a landing either on the ground or on a perch, with its head to the wind, but what seems hitherto to have escaped observation, so far as the author knows, is the strategic finesse with which this bird of prey avoids casting its shadow in front if possible. It seems to understand perfectly that the enemy is warned of its approach in this way.

The author once watched the movements of a voracious hawk that repeatedly visited a hen-yard. Out of four successful raids, three were accomplished on cloudy days, and were instantly effective, for the bird came and went with the greatest

speed, and with an audacious freedom very different from its behaviour on the clear day.

When the sun shown it would circle over the neighbourhood trying one angle of approach after another. Its shadow passing over the ground of the farmyard invariably sent the hens and chickens to cover. Finally, with a manœuvring which could have had but one end in view—that of getting its tell-tale shadow behind—the bird descended like a flash of lightning and was off in an instant with a struggling chicken in its claws.

On three occasions the creature went through these preliminary movements; and if it were not endowed with the power of reasoning out its relation to the sun, or to understand why its shadow was ahead of it or to the rear, it most certainly was possessed of patience and strategic sense to a remarkable degree in altering its angle of approach until success crowned its efforts.

The oyster-catchers are an interesting group of bird fishers. While they do not display any particular strategy in their fishing, they do work as a team in that they all begin and stop at the same time. These birds, so named because of their methods of feeding on clams and oysters, are famed for their ability to pry open, with their knife-like bills, the tightly sealed shells of their prey. There are

several species, the European living along the coast countries of Europe and parts of Asia and Africa; the American living along the sea-coasts of the temperate and tropical regions, "from Nova Scotia and Lower California to Brazil and Patagonia." Occasionally they are found even in Greenland. They choose sandy beaches for their feeding-grounds, and conduct their foraging in large groups. It is impossible to compute the amount of shell-fish they consume, but it is admitted to be enormous.

Another shell-fisher is the courlan. He is a large rail-like bird, with a powerful beak which enables him easily to open shells. He wades around in shallow water and hunts for mollusks with his feet, and when he finds one he dashes his beak between the valves, and then carries his prey to the shore, where he prys open the shell and eats the mollusk. Possibly the best known of this family is the Florida courlan, often called the crying-bird, crazy-widow, or lamenting-bird. It is so named because of its dark plumage and its habits of a recluse; at night it cries in the most pitiful manner like some one weeping for a departed friend.

The black skimmers are a strange group of fishers who live along the low, sandy grounds, and islands of our coast countries. Their methods of

fishing are most unusual, owing to an apparent deformity in the beak which enables them to plough through the water for their prey. In most all birds the maxilla, or upper part of the bill, is unmovable, while the mandible, or lower part of the bill, is movable; the skimmer, however, has a pair of scissor-like blades, which are very sharp and movable. The mandible is doubly as long as the maxilla; and as the skimmer flies very near the surface of the water, he ploughs through the waves with his razor-like mandible, where the fishes swim, and whenever a fish appears he snatches it up and arises from the water to swallow it on the wing. These fishers rest on the sand-banks during the entire day, and when night comes on they begin to chatter among themselves like so many old fisherwomen, and after much ado go forth to play and fish among the waves.

The snake-birds are widely distributed in the tropics of both hemispheres, and their skill in fishing is their greatest asset. Dr. Brewer, in speaking of the American species, says: "It lives principally upon fish, which it seizes by rapidly darting upon them with its sharply pointed and slightly toothed beak. In this movement its neck, which is very long, is thrust forward with the force of a spring, aided by the muscles, that are large and well-developed in the lower and anterior portion of the

neck. When fishing, the Anhinga stands with only its head and neck above the water; when it makes a plunge it remains a long while beneath the surface; and when it rises again, the long and undulating neck has somewhat the appearance of a serpent. . . . It is said to be the very first among the fresh-water divers, disappearing beneath the surface with the quickness of thought, moving scarcely a ripple on the spot, and reappearing, perhaps with its head only above the water for a moment, at a place several hundred yards distant."

The ibises are wading and fishing birds closely allied to the storks. The oldest known, and by far the most interesting, is the sacred ibis, about which cluster so much romance and mythology. It was the "emblem of Shott, the scribe or secretary of Osiris, whose duty it is to write down and recount the deeds of the deceased." Many mummified bodies of these birds are found among the ancient tombs of Egypt, and numerous monuments bear carvings and inscriptions to them.

The American wood-ibis is renowned for its fishing parties. These fishers form in groups of several hundred to a thousand, and march like a troup of soldiers until they come to a small lake. Then they wade into the water, and stir up the mud with their feet until all the fish rise to the surface, where

they are immediately killed by the strong beaks of the birds. Soon the top of the water is covered with dead fish and frogs, and the fishers eat to their hearts' content, and march out.

There is a large group of fishing owls and, as might be expected, they fish only at night. The African fish owls feed chiefly on wild guinea-fowl and fish; the brown fish owl of India, Ceylon, and Burma, lives in deep forests near the sea, and sleeps during the day. But when night comes it emerges from its dark retreat and goes in search of crabs and fish. One of the most interesting of owls is the snowy owl. Its home is in the Far North, and it usually feeds on wild game, but occasionally it goes angling. And, unlike other owls, this it does in daytime as well as at night. Audubon speaks of seeing one of these northern owls fishing near Louisville, Kentucky. Evidently the owl had gone South for a vacation.

It is interesting to note that among the fishing birds the beak is used as a shuttle, hook, shovel, gimlet, auger, pick, hammer, wedge, spear and even a needle! With such an assortment of fishing tools it is easy to see what a vast number of fish these birds catch. It is claimed that the gannets of St. Kilda consume over one hundred and six millions of herrings each year. There are hundreds of wa-

ter birds that get their living by fishing, and most of these are industrious, voracious, swift, and strong, and in all ways well equipped for their profession.

Our human fishing smacks are not to be compared with the innumerable bird fleets of aerial, submarine, and surface fishers. They catch every kind of fish, from a mackerel to a mussel. Many of the fresh-water fishers wade and search the rivers from headwaters to the sea, and cover the coast regions of the whole world.

It seems that no form of sea life escapes these voracious bird fishers. Even the shell-fish, whose shells are flinty hard and securely anchored to rocks at the bottom of the sea, are at their mercy. One of the most astonishing things of nature is the unthinkable depth to which the scaup-duck, the scoter, and the eider dive beneath fathoms of water and crush and devour the hard-shelled fish, such as mussel and whelk, with as much ease as a thrush would kill a small beetle.

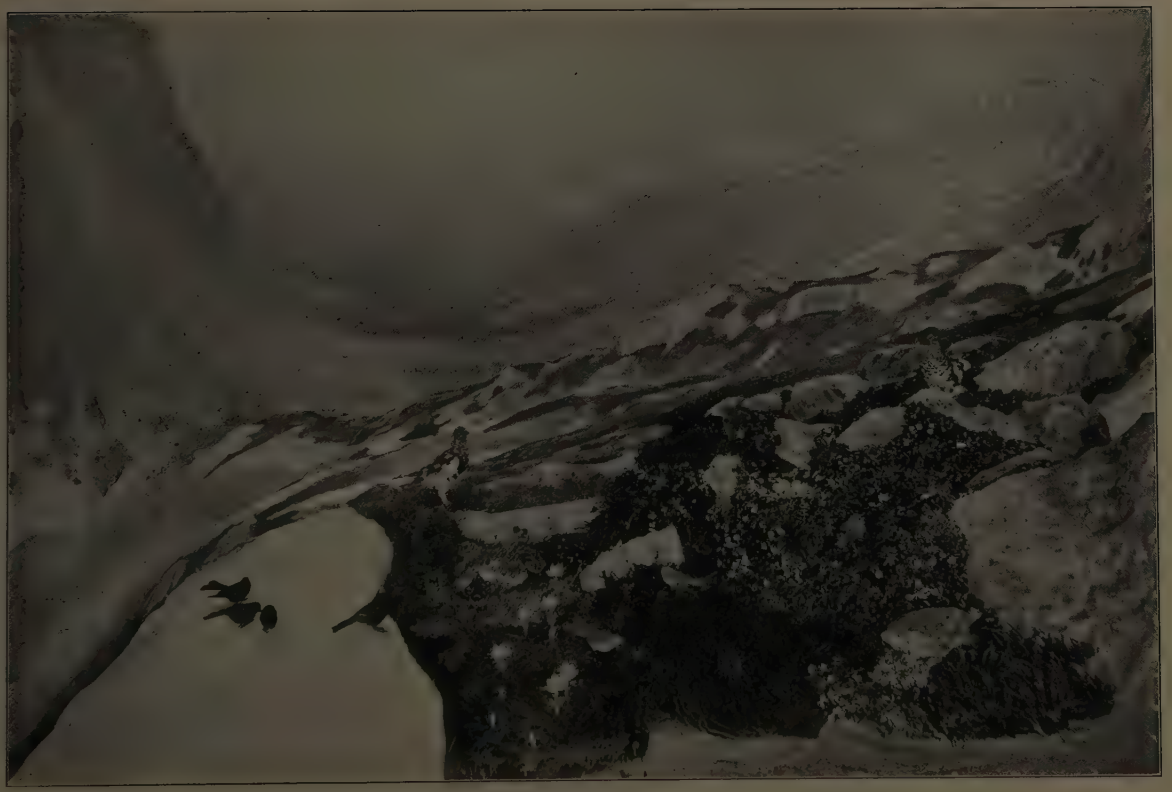
Most of these birds, however, are especially equipped for their particular kind of fishing. The scoters and the eiders have a strong ridge along the upper part of the beak which gives it great strength for crushing sea-shells, and notched or corrugated teeth to assist in holding the shells. No

weather seems to disturb them, for they will go fishing in the stormiest gale, and fish indefinitely beneath the waves, paying no attention to the weather above, and only rising occasionally to the surface of the water to get a breath of air before diving again to their delicate submarine dinners.

These birds, with their wonderful power of diving, and the ability to crush hard shells, find the matter of earning a living very easy. As the mussels do not move, the scaups and eiders can dive to a bounteous feast whenever they are hungry. On the other hand, many of the fishing birds, such as the razor-bills, gulls, and ducks, which have to seek out and pursue their prey, are somewhat dependent upon the weather, and are often very hungry and half-starved in the winter.

In their fishing, birds are the best of sportsmen, as they stake their very lives upon the result, and use their wits with astonishing success in order to insure themselves against failure. All those that live entirely by fishing have peculiar powers which aid them in the capture of their food, and this is true of all other means of livelihood in the bird world. But intelligence, strategy, and sustained physical effort are likewise necessary, and every species has its own proportion of these requirements to face.

THE PTARMIGAN CHANGES THE COLOUR OF HIS FEATHERS TO MATCH THE BACKGROUND



THE BIRDS OF THE FAR NORTH WHO ADAPT THEIR PLUMAGE TO THE CHANGING SNOW-FIELDS

To some birds nature has given an easy life, to others a hard one. But in each case it is possible to succeed well or to fail miserably, and those birds that best fulfil the tasks imposed upon them thrive best, regardless of the relative difficulty of their existence. Bird and beast and man must obey without question the commands of Nature, be they stern or mild, and none may profit by avoiding them. There is a beautiful lesson in the example of the different species of the feathered tribe, which waste no time in trying to imitate their more gifted brethren, or in decrying their inferior equipment, but bravely employ those talents which they possess, and succeed by their own efforts and in their own separate ways.

CHAPTER XIII

MIMICS AND VENTRILOQUISTS AMONG BIRDS

The moping heron, motionless and stiff,
That on a stone, as silently and stilly,
Stood, an apparent sentinel, as if
To guard the water-lily.

—Thomas Hood.

AMONG the many interesting phases of bird life, none possesses a more absorbing interest than that relating to their various kinds of mimicry. Often colour serves to protect a bird by enabling it to escape danger, or capture its prey. Many birds have learned, or have assumed a form of mimicry whereby they so closely imitate their immediate surroundings as to pass unnoticed by their enemies. To this protective resemblance large groups of birds owe their lives.

In the far north the ptarmigan, during the winter season, assumes a snow-white garb, so that against the snow it is unnoticeable, but as the summer months come on it assumes the exact colouring of the grey lichens and mosses among which it lives.

Numerous northern sea gulls have a similar protection; and every sportsman is familiar with the protective colouring of game birds, such as quail, grouse, woodcock, pheasants, wild turkeys, and a number of water birds.

Only of recent years has man learned that all variations and peculiarities of birds' plumage and eggs have special significance. At one time these were looked upon as serving for ornament only, and with no other cause for their existence than a gratification for the eye, and a more harmonious agreement with nature. But now we know that many birds that are harmless and unprotected are found to mimic not only the colour of their inanimate surroundings but sometimes the colour and even the sound of dangerous animals and birds.

The forms of mimicry of a bird are largely determined by its habitat and its enemies. The brilliant colourings of the cock pheasant are strikingly different from those of the female bird. When sitting on the nest, her plumage is exactly like the surrounding brownish grey foliage. The same is true of various species of wild ducks, especially the mallard. The chaffinch, the ring ouzel, the stonechat, the mocking-bird, the brown thrush, the plover, the curlew, and innumerable others so closely imitate their surroundings in the structure of their nests

that to the unskilled eye they are only part of the landscape. When the female chances to be the more gaily coloured, then the duties of incubation fall largely to the male. The more brilliant the plumage of the male, the less he remains around the nest during incubation. This partially explains the seeming indifference of certain male birds to their family duties.

What wonderful appreciation of the benefits of protective resemblance is seen in the nest of the humming-bird! It is placed on the grey-green bough of an apple tree, silvered over with lichens, exactly like those of the branch on which it rests, with here and there a bit of green moss and white paper so interwoven as to appear precisely like a cluster of flowers. The average person passes it unnoticed. I have seen a humming-bird's nest so skilfully arranged in a honeysuckle vine that the deception was rendered almost complete. Humming-birds themselves are so brilliantly coloured that as they flit in and out among nectared flowers glistening like jewelled leaves, they are well protected, especially if the foliage is thick.

The number of individuals in the bird kingdom belonging to an imitated species is greatly in excess of those imitating; these imitations are not only of plumage and colour, but voice and call as well.

The scream of the hen-hawk is so closely imitated by the less-feared blue-jay that he can completely terrify a group of small birds by his voice. Crows imitate other bird-calls very well. Sometimes they seem to have a secret method of calling the attention of their own species to the nest of a harmless bird which they wish to destroy; they combine in a vocal disguise so complete in its simulation that even the setting bird pays no attention to the ruse. As a result, she pays with her own life.

Passing to the desert regions of brown sage-brush and burning sand, we meet with the same phenomena in both voice and colour. The plumage of every bird—whether wild turkey, lark, quail, sand grouse, chat, sparrow, or owl—assumes a desert-colour. This is of uniform sand shade.

During the past summer I found a redbird's nest built among reddish-brown roots in a red-clay gulley. The upper plumage of the female bird, when sitting on her eggs, harmonised so perfectly with her surroundings that had she not flown off the nest at my near approach, I would possibly not have seen her. I also came upon a wren sitting on a nest which was wonderfully arranged in an old, discarded sausage-grinder, so that it closely resembled the colour and form of the grinder itself. One happy day she and her dainty brood of five

youngsters hopped forth from the rusty instrument to greet the world.

The term "mimicry" is misleading in so far as it conveys the idea of conscious imitation, especially as regards colouration, which is supplied the birds by the bountiful hand of Nature. In voice imitations there is more self-direction. Perhaps the American mocking-bird is the most perfect vocal mimic among all the bird family. Its marvellous powers are such that the Mexican aborigines called it *centcontlatlolli*—four hundred tongues or languages.

In my New York studio-laboratory I have two tame mocking-birds, whom I call David and Jonathan. I have raised them from tiny babies in the nest. David has learned Dvorak's *Humoresque* from a Victrola record, and Jonathan sings parts of several simple pieces. They have never been away from the man-city and so have not learned the calls of the wildwood birds; but many sounds which they have heard repeatedly they can produce with such perfection that the most skilled ear is often deceived.

These remarkable birds imitate the human voice, though not so well as the cries and calls of birds, the barking of dogs, the noise of the elevator, the ring of the telephone, the flow of water, the scales on the

piano, all the various noises and sounds of a great city. Need we wonder that many of the greatest thinkers of to-day accord birds a soul as well as a mind!

When hungry, albatrosses scream without ceasing in a strange way which sounds like the bray of an ass, or the neigh of a horse. In speaking of the lyre-bird, Mr. Leycester says: "One of these birds had taken up its quarters within two hundred yards of a sawyer's hut, and he had made himself perfect in all the noises of the sawyer's homestead—the crowing of the cocks, the barking and howling of the dogs, and even the painful screeching of the sharpening and filing of the saw."

Charles Darwin speaks of two very strange mimics of Chile. One is called "cheucau," and it lives in the most gloomy and dismal places within the forests. This little red-breasted creature is difficult to find, but when found he is usually hopping around among the dead canes and dead twigs with his tail cocked upward. The natives have many superstitions about him because of his weird and varied cries. There are three distinct calls: one is called "chiduco," and foretells good; another "chichido" is an omen of calamity; and a third, "hiutreu," beware of enemies! These words are supposed to represent the sounds, and the natives are in

several ways governed by them. Another species of the same family, but larger, is named "guid-guid" and by the English it is called the barking bird. The name is apt, for the most skilled ear would mistake its bark in the forest for the yelping of a small dog.

Darwin says: "In my rough notes I describe the strange noises, which, although frequently heard within these gloomy forests, yet scarcely disturb the general silence. The yelping of the guid-guid, and the sudden *whew-whew* of the cheucau, sometimes come from afar off, and sometimes from close at hand; the little black wren of Tierra del Fuego occasionally adds its cry; the creeper follows the intruder screaming and twittering; the humming-bird may be seen every now and then darting from side to side, and emitting, like an insect, its shrill chirp; lastly, from the top of some lofty tree, the indistinct but plaintive note of the white-tufted tyrant—flycatcher—may be noticed."

The bittern mimics the bellowing of a bull. This strange sound is produced by the mimic in an unusual way: he partially buries his beak in the water as he bellows. The South African drongo shrikes mimic many strange and weird sounds of the forest; while the ibis screams like a child being tortured in the most fiendish manner. At first the

A MOTHER GROUSE OF THE SIERRAS CALIFORNIA

YOUNG MARSH HAWKS SAFELY HIDDEN AWAY IN THE TALL GRASS

screams are loud, then they grow weaker and weaker until they finally die away in the distance by low sighing and groaning.

Not least among our mimics are the pinnated grouse, whose howls precisely imitate those of the prairie wolf. In South America we find the toropisju, one of the umbrella birds, who brays like a trumpeter—hence its name; the red tunqui grunts like a wild pig; while the macaw screams like a crying monkey; and parrots chatter in imitation of every imaginable sound.

The most noticeable thing about most of these mimics is their individuality; even those of the same family differ as greatly as the members of a human family. One of my mocking-birds, David, is affectionate and is even on friendly terms with my bullfinch and redbirds, and at times will play with them for hours over a piece of string or a pebble. But Jonathan is proud and haughty, refusing to recognise my entire bird family, with the exception of his friend David. They are inseparable companions and often romp and play until they are so exhausted that they cannot fly.

Jonathan's house is his castle and he seems perfectly satisfied to remain in it at all times, provided no other bird disturbs him, while David is a sociable creature. He delights in paying calls to the other

members of my little bird colony. He visits them daily, and is even interested in the various kinds of food he finds at their homes. One of the canaries, Moré, is his special chum. I have seen him terribly maul little Miss Bingham, the saffron finch, for having pecked the canary. His only serious fault is his desire to bathe in every tub of water he finds while on his visits. This would not be quite so objectionable even to the brown thrush, whose well-appointed house is ever the acme of neatness, but for the splashing of water over her entire cage. This, no bird hostess is willing to tolerate!

Parrots are perhaps the best imitators of the human voice, with crows, talking minors, and parakeets as close seconds. But the powers of each of these are too well known to require further elucidation. Mimicry is not confined to only a few species of birds, but is present in some degree in practically every bird. The term "mocking-bird" might be applied to many kinds of singers.

The bull-finch and the gold-finch are famous for their powers of imitation. While their native notes are very simple, they may be taught almost any tune, and can even learn to articulate a few words. Most of the trained bull-finches come from Germany, where they have been regularly schooled by experts. Cobblers and lone people with much pa-

tience make good instructors for these mimics. A piping bull-finch is worth many dollars. The gold-finch soon learns to mimic the song of canaries, the chirp of sparrows, the bell-like notes of the black-bird, and the call of the redbird; in fact, any bird notes that he chances to hear repeatedly.

Skylarks are known to imitate the distress cry of the plover, while lapwings will imitate various calls of alarm. The blue titmouse defends her nest in a hole by puffing up her feathers and hissing like a snake.

There is no doubt that the stormy petrel has learned to imitate the motion of the waves, flying with motions not unlike those of certain fish. Corn-wall aptly describes these movements:

"Up and down! Up and down!
From the base of the wave to the billow's crown,
And amidst the flashing and feathery foam,
The stormy petrel finds a home,—
A home, if such a place may be,
For her who lives on the wide blue sea,
On the craggy ice, in the frozen air,
And only seeketh her rookery lair
To warm her young, and to teach them spring
At once o'er the waves on their stormy wing!"

These strange little "water-witches" or Mother Carey's chickens are familiar to all sea-travellers.

Sailors have many weird stories to tell of them, and legends refer to them as "Neptune's darlings, the smallest bird cradled on his bosom." Strange stories claim that they are sent from hell to appear as "devil-birds" which glide and play over the corpses of lost sailors. Superstitious seamen believe they bring evil, and are responsible for storms and hurricanes. How absurd! "Just as well," says Wilson, "might the sailor curse the friendly rays of the lighthouse or the stars of the night which guide him on his voyage, the buoy or beacon which warns him of hidden rocks and shoals, as abuse the stormy petrel; for as these give notice of coming danger, so does the bird warn the mariner, and afford opportunity to make all snug against the arrival of evil." It is a mistake, however, to claim that these trustful, delightful little swallows of the ocean show themselves only when a storm is approaching, and that they never alight to swim in the water.

One of the most interesting and peculiar forms of mimicry among the feathered tribe are simulations of death. Not a few birds are given to this ruse. A water-hen is often found "possuming." An English sportsman tells of a hunting trip when he chanced to come upon a water-hen lying half in the water, with her head concealed by brown leaves which had blown near the place. He picked up the

bird by the wing, and apparently she was quite limp and dead. Thinking she had fallen as the result of disease or accident, he tossed her into the water, when to his astonishment she suddenly flapped her wings and flew away.

The landrail, whose croaking and mysterious note is often heard in the corn-fields in early spring, simulates death when danger is near. Perhaps this is owing to its clumsy body and almost useless wings which give it no other means of protection. It is rarely seen except when flushed by a hunting dog. Turkey buzzards, when captured, will often simulate death.

Not only are many birds mimics, but quite a few are ventriloquists. Raincrows have been the cause of much superstition among the coloured people of the South. These superstitions have arisen because of the raincrows' power of making their voices come from the opposite direction from which it is sent. One summer I had an interesting experience with a pair of raincrows in eastern Texas. I found two fledgelings in a small scrubby oak tree, just ready to fly. The parent birds were concealed in nearby trees, while their coarse croaking voices seemed to come from far away in the opposite direction. At times the strange sounds seemed to emanate from a small pine forest several hundred yards away.

Then I climbed into the tree, near the nest, and the crows flew near me, while their voices still seemed to come from all directions.

The corncrake is a specialist at ventriloquy. It is by this strange power that it protects its nest. If an enemy approaches its home, suddenly a strange *crake, crake* is heard in an entirely different direction. A ghostly feeling comes over one as the notes swell and die away to an echo!

The ring-ouzel and the grasshopper-warbler also are gifted with ventriloquial powers which they use to lure enemies away from their homes.

The mocking-bird is perhaps one of the ablest ventriloquists. David, to whom I have already referred, has learned to throw his voice to various parts of the bird-room at the same time. He uses this power, however, only at night. His favourite way of calling me seems to be by ventriloquistically imitating the *mew* of a cat. He knows that a cat is the least desired animal for a bird-room! Jonathan does not seem to use this power.

The bell-bird of South America is a ventriloquist of most remarkable ability. No songster of the forest causes so much astonishment by its vocal powers, and clear bell-like notes. Waterson says: "He greets both morn and eve with his song; and yet when the ardent sun's rays lull all nature into

stillness, his cheerful tones ring through the silent forest. One hears the notes, and then there is a minute's pause; again, the bell-like sound, then another interval of silence; a third time this takes place, when after a pause of six or eight minutes, the song bursts out afresh. Acteon would turn from the wildest chase, Marie cease her evening hymn,—ay! Orpheus, himself, would forego his lute to hear this bird—so full, so fresh, and so romantic is the ring of his melodius song."

The bell-birds of Guiana and Brazil have not only the gift of speech, but marvellously developed ventriloquistic powers as well. They are rarely seen in the wild state because they frequent the tops of the highest trees, and at this giddy height their snow-white plumage and transparent wings render them almost invisible. One may stand beneath the tree on which the ventriloquist is located without even suspecting that the distant bell-like tinkles, so modulated with regard to the intervals as to produce the most wonderful melody, are being produced right overhead.

The sandpipers practise most interesting protective acts of deception. Startle a sandpiper from her nest and she reels and stumbles before you, while her mate in the distance encourages her acting.

She hopes by thus attracting your attention to save her precious eggs in the sand.

The lapwing, when disturbed, is a pitiable sight with her seemingly broken wings and her mournful cries. Here she tumbles, there she flops, yonder she runs, but ever away from her nest! Her mate also adds to the performance by innumerable aerial gyrations which aid in distracting the attention of the observer from a near-by nest where the little ones are hopelessly exposed in the thin grass.

Many shore-haunting birds have devised methods of hiding their eggs. The guillemot makes no nest, but lays one egg in a hole in the side of a cliff. The ringed dotterel makes her nest on a bank of debris and sticks the eggs up on end so as to resemble driftwood. Partridges and pheasants usually lay their eggs on dark leaves, and ofttimes cover them when they go away. The water ouzel builds a domed nest which looks like a bunch of green moss. The goldcrest swings her delicate hanging-nest among the long, drooping pine boughs, where it is very difficult to find.

The eggs and plumage of certain game birds are very difficult to detect from their surroundings. The snipe has a pencilled plumage which is hard to discern among the brown marshes where the bird is found. The woodcock's leaf-strewn nest may be

walked over without being observed. The colour of the red grouse is strikingly in accord with that of the purple heather among which the nest is found. Their eggs also imitate the colouring of their surroundings. The wind-shaken feathers of the shaggy, gaunt herons make them look precisely like driftwood when standing in a pond.

The night-jar or goat-sucker has learned to protect herself during the day by resting on grey stones. Her mottled plumage corresponds to the colour of the stones; and her eggs, also the colour of her plumage, are laid on the bare ground, or on the stones. Leaf-warblers attach to their nests leaves of the same tree in which they are built. Many of the brilliantly coloured birds of the tropics, like the toucans, motmots, and bee-eaters, build their nests in the holes of trees, and consequently have no need of mimicry.

Birds like the lark approach or depart from their nests by darting suddenly down through the underbrush, then proceeding in a roundabout way so as not to be followed. The winchat also approaches her nest in a winding and deceptive manner. Rails, if they are aware that they are being watched, actually pretend to sit down upon their nest when a long distance from it. Sometimes the male bird

will attract an observer's attention while the female silently enters the nest.

Thus we see that nature has bountifully supplied her feathered creatures with instinct and intelligence sufficient to baffle their enemies, including man himself. Every variety of bird has some peculiar way of defending itself and its nest. Those that lay their eggs on bare, exposed situations use distracting motions. Birds that nest in deep forests or thickets are adepts at silence: this is their protection; while predaceous birds employ warlike methods, and birds of a general habitat resort to mimicry, not a few of them having the additional accomplishment of ventriloquy. Wherever these marvellous little beings are found they exercise a God-given craftiness in their own protection. They are another thing for man to reflect on when he grows arrogant in his own wisdom.

CHAPTER XIV

BIRD ACTORS AND THEIR THEATRES

He flaps his wings, erects his spotted crest;
His flaming eyes dart forth a piercing ray;
He swells the lovely plumage of his breast,
And glares a wonder of the orient day.
—From "The Hoopoe."

PERHAPS the most interesting people of the human world are the actors and the actresses; and the same is true among birds. They not only have numerous kinds of acts and plays, but they have their definite theatres and playhouses, where they come together to indulge in the various games they have learned for their own pleasure and the amusement of their audiences. Among certain groups of birds every community has its own playhouse, and some have many.

All birds are artists in the truest sense of the word, and show not only marvellous instinct in their acting, but a reasoning power which seems quite as remarkable as that of a human being; for the intellectual capacities of birds are by no means so inferior to those of man as the average person be-

lieves. No better proof of this exists than in their inimitable acting and playing.

From the earliest times the wonderfully developed art of mimicry among birds has been deemed as verging upon the supernatural. Men, especially the less educated, being unable to explain the mystery, have contented themselves with believing that these actors are birds of ill-omen. This is especially true of night birds, such as the owls. In Madagascar there are seven species of these actors, and they are referred to by the natives as "spirit-birds" and are believed to be the embodiment of the spirits of the wicked. Their screech is the presage of great misfortune. The rarest of these "day-sleeper" actors is very beautifully marked with silvery wave lines over pale reddish brown. The uncanny eyes and elaborate head-dress so skilfully used in acting lead to many strange tales among the superstitious natives.

The methods or schools of acting in the bird world are quite as varied as in the human world. Each individual plays the part for which he is best suited, and which best aids in his combats, or in winning a mate, as the case may be. Usually the song-bird is not so clever an actor as his songless brother, whose chief personal charm is in his acting. And when the season of love approaches and the

latter begins to realise that his harsh and hoarse voice will not win for himself a mate, he then begins to rehearse for his act!

When the rehearsals are all over, and the performance is perfected, he goes forth to seek her, pouring out his passionate pleadings in a hundred struttings and attitudes. He displays his lovely plumage in a series of poses, as he challenges danger with his cries of defiance and gallantry. Sometimes he pleads in sobbing tones like the cuckoo. This call, however, is not a song in the limited sense, but is a pleading call for a mate, and is never uttered except during the courting season. Guinea fowls also have a call-note which is given only during the mating season, while redbirds, or cardinals, have a special courting-language.

The bird has a voice second to no living thing. This intellectual voice in many birds is especially endowed with song, and this song is speech. All animals express their feelings by means of sounds, yet these are not, in the truest sense of the word, either speech or song. The bird, on the other hand, has most beautiful speaking tones, which are pleasing to the ear, and which all true bird actors use to the greatest advantage in portraying their emotions. The bird's voice has many properties, such as fulness, strength, roundness, versatility, and elasticity.

The redbird is an exceptionally good actor, and uses every art known to the actor in expressing himself. For instance, if he is angry, he drops the crest on his head and reaches out his neck as he snaps his beak with great rapidity, adding little hisses that are unmistakable; if he is lonely, especially late at night, he utters low sad chirping notes, reminding one of the languishing call of a whippoorwill; if he becomes frightened he utters sharp, nervous calls; help is needed! But when he wishes to express joy or satisfaction he uses the tenderest notes, and his voice is so modulated that no one could mistake his feeling. He is an actor of the highest type, and his every emotion has its physical poise of body to accompany it.

The starling is an actor, or rather a merry clown, of very remarkable abilities. He is sociable, and ready to amuse whenever an audience appears; one is reminded of the words of Hurdis:

> "High on the topmost branches of the elm
> In sable conversation sits the flock
> Of social starlings, the withdrawing beam
> Enjoying, supperless, of hasty day."

He is always in a good humour, and is equally at home under all circumstances. He radiates joy at all times and under all conditions. A cloudy day or

even a snowstorm has little effect upon this philosopher who sits perched upon a beam in the village church, or near a window giving vent to his joy. Both in America and in England he displays a marked preference for village or city life, and seldom takes up his abode in rural districts. His plumage is a glossy black with trimmings of metallic blue and green, which is brilliant in the sunlight; the wings and tail are light grey, the beak yellow, and the feet a browish red. As autumn comes on, the darker feathers are tipped in white, and the starling has a spotted appearance.

No bird loves human society more than the starling, and he is ever ready to show his appreciation of a nesting-box in song and act. He is happy, trustful, cunning, and comical at all times. A group of these strollers love to gather round church steeples and sing and chatter at sundown. Some of them inflate their throats and wave their wings and hop about as though they were endeavouring to tell the entire world of their happiness. Late of evenings they often gather in marshy places by the reed-beds, where they hold such a concert that no one in the neighbourhood can sleep. They chatter and jabber, hop and jump, forming indeed a circus of the rarest kind. They make attractive pets, and usually become much attached to their masters.

They are great mimics, and children delight in their acting.

The most interesting bird-actor I have even known is a chocolate-faced parakeet whom I christened Moses. He came to me as a gift from a bird dealer when he was quite a baby, and I immediately began to care for him as best I could. The dealer told me that Moses had been brought from South America, and that a sad accident had befallen him on the journey—a cockatoo had bitten off one of his feet. However, the wound was entirely healed, and I was delighted with this baby actor.

But Moses was an untrained birdling, and he cried and screamed almost day and night. I tried every imaginable thing to soothe him, but still he cried. Finally my neighbours complained of him, and, alas—I had to find him a new home. Then it was I gave him to a friend, without telling of his bad habits. Each time when I inquired of Moses I was informed that he was doing beautifully. From time to time I called to see him, and much to my surprise I learned that he was a very clever actor, and could do innumerable little tricks, such as lying on his back and pretending to be asleep, wiping his beak on certain wires in his large cage, scratching his head on his swinging perch, besides imitating many sounds, like the ring of the tele-

phone, the flow of water, the sound of the dumb-waiter, and a number of bird calls he had heard when he was very young. Later he learned to imitate the call of a puppy; besides he will talk indefinitely, and he seems to know just how to show his appreciation of kindness by waving his head from side to side, and by playing, like a child, when noticed. Strangely enough he has never screamed and cried since the day he went to live at his wonderful new home, and his new coat of bluish-green plumage is strikingly beautiful. I fear, however, that a part of his sweet temper is due to the extra care and good food he receives where he is!

Perhaps the best actors of the bird world are found among the gallinaceous family. They have the most modern and extravagant ideas of married life; and divorce with them is very common.

The capercailzie are really the grand opera performers of the bird family, and seem to think it necessary to go through with an entire opera in order to win a mate. Their play is a strange and interesting combination of a love-dance, love-song, and a demonstration of tender passions, all at the same time! It may be likened to a motion-picture play with notes and music to accompany every part of it. Hunters are familiar with these actors and their plays, and not infrequently follow the birds

during their theatrical season that they may kill them. A poet has given us a true description of the follies of certain bird actors in these lines:

"The cock of the wood courts his mates in the forest gay
While strutting in ecstasy upon a fir branch high,
And marks not the hunter's stealthy tread;
Many thousands thus, alas, are caught . . ."

The day before the "show" opens, the capercailzie goes to the chosen place, usually a larch or fir tree, where the bark is suitable for dancing, and there begins to dress his feathers. He makes quite a little noise with his toilette, and from time to time listens with great attention to see if any "fair" one is near; he flies to the ground and pecks about uncertainly for a few moments, as though he were planning what to do next. Then he returns to the trees and begins a series of choking sounds, which some naturalists have referred to as "retching" or "cramming." This sound is not unlike the grunting of a pig, and is a sure sign that the bird will play again the following morning.

In the early morning, before sunrise, the performance begins with a smacking sound, which is not unlike the low guttural chirping of a turkey-gobbler. This increases in rapidity until it becomes

genuine music. Various orchestral effects are heard —flutings, reed-like twitterings; then, according to Mr. Geyer, "the grinding, whetting, and playing begins, which is also called 'stanza- or verse-making,' a sound which, in spite of every essay, no mortal being has ever been able to imitate, wholly or even partially, and probably never will. This sound lasts from about three and a half to four seconds; it somewhat resembles the whetting of a scythe, and may be, in a way, expressed by the word 'hide, hide, hide, hide, hide, hide, hide, hide-er-i.' During this 'playing' the bird is usually seen perched on some prominent or withered branch, with drooping and trembling wings, ruffled feathers, raised and out-spread tail; in short, it much resembles an angry turkey-cock; the neck is outstretched, the head and eyes turned upwards and in continuous movement. At the same time the bird generally walks up and down the branch . . . and treads a number of small branches to pieces; in fact, the creature seems to be in a mesmeric state, which renders it totally unconscious of all that is going on in the outer world; so much so, indeed, that if shot at and clean missed, while in this state, it continues 'playing' and remains quite undisturbed by either the flash or report."

The "play" closes, or the act is finished, shortly

after sunrise. The gallant actor then leaves his perch, and salutes his numerous mates who have so favoured him with an admiring audience; from one to the other he walks as they greet him with soft caressing tones, as a Sultan is greeted in his harem!

The bower bird of Australia builds a charming theatre or playhouse, which in perfection of art reminds one of Stuart Walker's Portmanteau Theatre. . . . "The theatre that comes to you." In reality the bower bird carries or builds his little playhouse near his lover's favourite haunts, and therein he acts playlets which portray all the emotions of his race. He dances, acts, sings, and courts, all at the same time, and ends by "popping the question" with his final bow.

Every bird actor has his own way of making love. The snipe slides in circles, dancing like a fairy in the loveliest way imaginable, as he bows and pleads in a most convincing manner; the brilliant and talented ibis seats himself in a graceful position before the one he would have for his mate; while the mocking-bird tumbles in the air, singing all night long. Cranes have a regular serenade and cake-walk which might compare very favourably with our old time negro cake-walks.

The common cake-walk has been known to birds for ages, and the laysan albatross, according to Mr.

Walter K. Fisher's description, is very interesting. He says: "At first two birds approach one another, bowing profoundly and stepping heavily. They swagger about each other, nodding and curtsying solemnly, then suddenly begin to fence a little, crossing bills and whetting them together, sometimes with a whistling sound, meantime still pecking and dropping little bows. All at once one lifts its closed wing and nibbles at the feathers beneath, or rarely, if in a hurry, quickly turns its head. The partner during this short performance assumes a statuesque pose, and either moves mechanically from side to side, or snaps its bill loudly a few times. Then the bird bows once, and pointing its head and beak straight upward, rises on its toes, puffs out its breast, and utters a prolonged, nasal *Ah-h-h-h,* with a rapidly rising inflection. While this 'song' is being uttered, the companion loudly and rapidly snaps its bill. Often both birds raise their heads in air and either one or both favour the appreciative audience with the ridiculous and indescribable bovine groan. When they have finished they begin bowing to each other again, rapidly and alternately, and presently repeat the performance, the birds sometimes reversing their rôle in the game."

Certain species of bird-actors perform their feats only during the courting season. Their extraordi-

nary behaviour in this period is quite unlike that of the rest of the year. The peacock, whose gorgeous dress needs no description, and whose wonderful "train" acts as an exquisite screen for him, is a veteran actor. Surely he must appreciate the advantage he has by appearing with such a magnificent appendage! And this he uses to great benefit in his acting—which is really his courtship.

Actor-like, he awaits the most dramatic moment before displaying his beauty. He carefuly watches the object of his adoration, and turns in such a position that his beauty may be concealed until the exact moment when he wishes to overcome her. Then he dramatically steps rapidly backward toward her, like a trapeze performer who is going to spring into the air, and suddenly whirls around and displays his gorgeous vestments! This turning is accompanied by a trembling movement of the train, as the quills drag upon the ground. Occasionally he screams out a word—perhaps some day we may understand it—but Miss Peahen seems utterly indifferent to his show, and offers him little encouragement or applause.

The common barn-yard turkey is an actor of no mean ability, and compares not unfavourably with the peacock. The turkey is, however, not so beautiful of plumage, nor quite so dramatic in his acting.

His art is carried on chiefly during the mating season, and his audiences are always composed of admiring female turkeys. As an artist he is high-salaried, and his reward is usually a mate.

Not a few of the smaller birds, such as swallows, bee-martins, and swifts, play "tag" or "last touch" at a regular time each day. They have their time for play and recreation just as children or healthy grown-ups do. During the play hour every bird from far and near seems to join in the frolic; they chase one another like romping children, and finally settle down on a telephone-wire or a tree for a sociable chat, after which each pair returns to its own resting-place or home. Play-time is usually late in the afternoon just before sunset.

Groups of swallows often assemble in long rows on the eaves of a building, and at a moment's notice arise and begin chasing one another around in the air with the glee of circus performers. And then as quickly as they begin their fun they all stop their play and chattering and either fly away or settle back on the eaves with the solemnity of barnyard fowl.

Side-shows or curtain lectures are common occurrences among the kites. Their entire family life is unusually interesting. When the male bird returns home after having stayed away for any

length of time, he is given a curtain lecture by his loving mate. In this way she shows her great regard for him; for the married life among kites is the happiest known in the bird world. How patiently and longingly Mrs. Kite waits for the return of her mate when he is away seeking food for the family! If he does not return promptly, she flops her wings and cries bitterly, and when he does return, his curtain lectures are more the expressions of great joy than scoldings for his delay. It sometimes happens that Mr. Kite has food for his babies, and is being spied upon by a robber in the form of an eagle, in which case he dares not fly toward his nest, but awaits an opportunity to drop the food from above to his young, or else remains hidden until his enemy—the robber hawk or eagle—has gone away. Then he goes home to his sorrowing wife and hungry children, to make them happy by his safe return.

The white-tailed kite of Argentina is an actor of remarkable talents. He is indeed handsome, with red eyes and white plumage, and his chief delight is in playing in tall tree-tops, especially during a wind-storm, when, with a group of fellow-players, he perches upon a slender swaying limb or branch, and balances himself with outstretched wings, until a strong gust blows him off his feet, when he

remains poised until the limb swings back underneath him. Sometimes a group of these actors suddenly fly into the clouds and seem utterly to abandon themselves to the fury of the wind. They are driven like snowflakes hither and thither, at last recovering themselves and darting back to their old positions.

Perhaps the argus pheasant is the most remarkable as well as the most beautiful of all feathered actors. While its plumage is not so gorgeous as that of the peacock, yet it is unquestionably the best dressed actor in existence. As its name implies, it has a hundred eyes in its plumage; and its secondary wing feathers are enormously elongated and of great breadth. It is a native of Sumatra and the Indo-Malay mainland. The beauty of this bird consists chiefly in the great number of "eye-like" spots, so coloured and arranged that they appear, when held in a certain position, like a ball lying in a cup. The primary quills are extraordinarily beautiful; the colourings are of delicate brown, dotted with soft dark spots, and there is a darker quill whose outer margin is surrounded by a band of lighter colour than the other parts. The plumage is thickly covered with tiny dark spots not unlike certain of the guinea fowl. The tail of the argus pheasant, like its wing-feathers, is of great length

and beauty, and adds the final point of perfection to an exquisite actor-artist. In fact, as an actor, he has no rival. While he is not acting, there is nothing extraordinary in either his appearance or his manner, but as soon as his acting or courting season begins he uses every known art of the actor to portray his work.

At the beginning of his theatrical season, he selects a level spot in a deep, quiet forest for his permanent "playhouse," and from this he sweeps away all dead leaves and underbrush for a space of six to eight yards square, until nothing remains but the clear, clean earth. Even a fallen dead leaf is immediately cleared away, and he would no more allow a straw to lie on his clean floor than a ballet dancer would permit rubbish on the stage on which she appears.

Alone, this gorgeous actor spends his weary days gesticulating and calling at brief intervals, "How-how, how, how, how!" This note is sometimes repeated from eight to ten times, or until a female pheasant answers by untranslatable words, "How-owoo, how-o woo-oo-oo!" Then the forest echoes with the answering calls of these actors until the female condescends to approach the theatre or playground. Here she witnesses a most remark-

able performance, which is wonderfuly described by Darwin.

As soon as the audience arrives, the actor assumes a most dignified air, and raises his tail and stretches his huge wings into a marvellous fan-like shield, which is carried in front of his body. "The neck and head are held to one side so that they are concealed by the fan, but the bird, in order to see the female before whom he is displaying himself, sometimes pushes his head between two of the long feathers . . . and then presents a grotesque appearance. This must be a frequent habit with the bird in a state of nature, for . . . on examining some perfect skins sent from the East, we found a place between two of the feathers which was much frayed, as if the head had here been frequently pushed through."

Reinhardt's ptarmigan of Greenland and Labrador and a number of his Alaskan cousins, among which are the white-tailed willow and rock ptarmigan, are all great vaudevillists. With them acting is always courting, and they make up for a poor act by wearing gorgeous costumes which they change very often. During the mating season, as soon as the male chooses a partner, he begins to strut around her with his spreading tail and dragging wings, and presses his breast against the

ground, stretching his neck at full length and producing a growling sound. Bending and twisting his neck, like a mad contortionist, he leaps into the air and rolls over and over like an intoxicated clown. And strange as it may seem, this foolish conduct seems to please the female. Surely the tastes of "the female of the species" are queer!

The ptarmigans of Alaska wear, during the summer, a costume of mottled buff-and-brown; at the approach of winter this changes to a snowy white one, which is worn until spring. The white-tailed ptarmigan lives above the timberline, on the bare and rugged mountains, south of the Yukon. This species is very rare and is seldom seen, except by guides who know just where they live. The rock ptarmigan is somewhat larger than his cousins, and is rather generally distributed, while the willow grouse ptarmigan is commonly found over all the tundras and open barrens of Alaska. Every one who travels throughout the Alaskan mainland soon becomes familiar with the willow ptarmigan and its interesting ways.

Among bird actors of the North there are a number that work throughout the severity of the long, cold winter. The ravens are especially famed as aerial performers, and may be seen in large numbers about the small towns and villages, perching on

the house-tops and visiting around the barns. They spend most of their time in the air, where they circle and tumble like professional acrobats in heels-over-head movements, and close their act by a long slide, like a parachute coming to earth. These strange performances are accompanied by a series of weird croakings and cries, in which all the group of performers participate. They give their show during the strongest gale, and whirl, tumble, soar, twist, and glide, like a bunch of frolicking sea-gulls over the Gulf of Mexico. Why they take so much joy in the raging storm, no one knows. However, it must be remembered that, notwithstanding their delightful acts, they are remorseless pirates, and rob, plunder, and murder the young of other birds, and destroy their eggs whenever the opportunity comes. They are equalled only in their piracy by their contemporaries, the Alaskan jays, who are the northern representatives of the Canadian jay, and like him, are called "camp-robbers" and "whisky-jacks." These pirates are welcome visitors to the camps, however, because of their clever and audacious tricks in seeking food. When encouraged, they become very tame, and are a source of never-ending amusement in the Arctic camps.

The strangest of all aerial actors is the parson bird of New Zealand. It has two white tufts which

hang under its chin exactly like the white bands formerly used by clergymen—hence the name. These interesting tumblers work in teams of six to eight, and may be seen on clear days tumbling, wheeling, soaring, and dropping in the air—doing everything known to the modern aviator, from somersaults to sailing upward suddenly like a sky-rocket, then closing their wings and supporting themselves by a rapid beating of their tails, which suddenly changes into a gliding parachute descent. They open their wings upon nearing the ground, and then either suddenly arise again, or fly away as if by a magic sign, and disappear in the distance.

The female pheasant is a wanderer, and has no permanent place of abode, except when she has a nest, but the cock is so devoted to his theatre, when once it is established, that the Malays, who thoroughly understand his ways, take advantage of him in a most ingenious manner. While he is away for food or recreation, they secretly enter his theatre or drawing-room and drive a thin tough bamboo splinter, as sharp as a razor, in the middle of the floor. As soon as the actor returns he seens the strange object and attempts to remove it by pulling with his beak, but it will not come, and finally in desperation he wraps his neck around it, and with a des-

perate jerk pulls at it. It does not budge, but the sharp edges cut his neck almost through, and he falls a victim to his own neat and practical ways!

Woodpeckers are fond of playing hide-and-seek with each other and with people. This game, however, is not all sport, but partly for their protection. If one is alarmed, or not just sure who his visitors are, he hops around behind a branch or tree-trunk and peeps out to see who approaches. I have seen at least six to ten red-headed woodpeckers playing hide-and-seek on a dead pine-tree in Texas. They dodged each other, flopped their pretty wings and lay close to the bark, and if seen, flew away to a near-by tree to continue the game. Such games tend to train the actors for self-defence in case of danger.

The red-heads have a cousin, the downy, who is the best known of all the woodpeckers. He is a cheery little actor, and the greatest friend of mankind. He loves company, and his manner of dress is most charming. He wears a coat of black and white on his wings, and a black cap trimmed in red. Of his thirty-six varieties of cousins in America, he is the most industrious, and possibly the most talented. He is capable of running a successful business besides his work as an actor. This business is that of raising bugs! Yes, he runs a bug factory,

and this is done in a most business-like way: he chisels out holes in live trees, and insects and beetles come there to deposit their eggs. This just suits Downy, and as soon as the grubs begin to hatch, Downy pierces them with his tiny sharp tongue and takes them to his babes in the hollow-hole in the tall pine-tree.

Downy has a northern cousin who goes south in October to visit him. His name is yellow-bellied sapsucker, and he is the little fellow who girdled your apple-tree last spring by pecking myriads of tiny holes in it that he might drink the delicious sap. He is fond of several kinds of drinks: the sap of the apple-tree, the juice of the sugar-maple, and, like many actors, he must have his wine—this he gets from the juice of the hemlock. The sapsucker often returns to a tree which he has girdled for wines, and finds a number of little creatures who have gone there to drink and have got their tiny feet fastened by the sticky sap. Mr. Sapsucker eats every insect within reach, and tries to catch others flying near. Unlike his cousin Downy, he never digs into dead wood for insects. His tongue is not long and sharp enough to reach into the holes and spear them; for the end of it is more like a soft mop or brush, and he can thus use it to better

advantage in gathering sap than in catching insects.

Downy has still another actor-cousin, the flicker, commonly known as the yellow-hammer. He has wonderful manners, and the black spots on each side of his face give him the appearance of a gentleman with burnsides. Gilbert Pearson relates a marvellous story of this aristocratic actor: "Soon the lady bird came and perched near her mate. Though she had no burnsides, she had a strip of red across the back of her head, as though it were her hood which had almost slipped off backwards. How oddly Mr. Flicker acted when she arrived! What strange antics he at once began to perform! He bowed to his mistress, and spread his pretty yellow wings like a cloak, as he swept now forward, now backward. He stepped side-wise and danced gracefully back again. He bobbed, he bowed, he displayed his every charm. A brave wooer was he as he laughingly, pleadingly, coaxingly called to her in his mellowest and most enticing voice. He said many things I could not understand, but *Yu'ch, yu'ch* was what he seemed most to say. The flicker is a devoted and demonstrative lover, and he pays homage to his loved one at home or afield wherever he meets her."

The art of expression among birds is as well de-

veloped in proportion to their present stage of progress as is that of man, and in dramatic sense and resources they are hardly less gifted than man himself. Comedy and tragedy they effect with equal ease, and they are clever at burlesque and pantomime. In fact there is hardly any phase of the modern theatre that cannot be found in a more or less highly advanced form among birds. Surely they are our brothers in the arts!

THE END

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